EFFECTIVENESS OF INTERVENTIONAL PACKAGE ON PULMONARY FUNCTIONAL PARAMETERS AMONG PATIENTS WITH CHRONIC OBSTRUCTIVE PULMONARY DISEASE ADMITTED IN SREE MOOKAMBIKA MEDICAL COLLEGE HOSPITAL, KULASEKHARAM

A DISSERTATION SUBMITTED TO THE TAMILNADU DR.M.G.R. MEDICAL UNIVERSITY CHENNAI, IN PARTIAL FULFILMENT FOR THE DEGREE OF MASTER OF SCIENCE IN NURSING

APRIL 2016

EFFECTIVENESS OF INTERVENTIONAL PACKAGE ON PULMONARY FUNCTIONAL PARAMETERS AMONG PATIENTS WITH CHRONIC OBSTRUCTIVE PULMONARY DISEASE ADMITTED IN SREE MOOKAMBIKA MEDICAL COLLEGE HOSPITAL, KULASEKHARAM

Internal Examiner

External Examiner

EFFECTIVENESS OF INTERVENTIONAL PACKAGE ON PULMONARY FUNCTIONAL PARAMETERS AMONG PATIENTS WITH CHRONIC OBSTRUCTIVE PULMONARY DISEASE ADMITTED IN SREE MOOKAMBIKA MEDICAL COLLEGE HOSPITAL, KULASEKHARAM

APPROVED BY DISSERTATION COMMITTEE ON : 23.12.2014

PRINCIPAL:

Prof. Mrs. Santhi Letha, M.Sc(N), M.A, Ph.D (N)
Principal
Sree Mookambika College of Nursing, Kulasekharam ……

RESEARCH GUIDE

Prof. Mrs. Ajitha Retnam, M.Sc(N), MBA. Ph.D (N)
HOD, Medical And Surgical Nursing
Sree Mookambika College of Nursing, Kulasekharam …….

MEDICAL GUIDE

Dr. J. Kaniraj Peter, M.D.
Professor & HOD, Department Of Medicine
Sree Mookambika Medical College Hospital
Kulasekharam …….

A DISSERTATION SUBMITTED TO THE TAMILNADU DR.M.G.R. MEDICAL UNIVERSITY CHENNAI, IN PARTIAL FULFILMENT FOR THE DEGREE OF MASTER OF SCIENCE IN NURSING

APRIL 2016

Bonafide Certificate

This is to certify the dissertation **"Effectiveness of Interventional Package on Pulmonary Functional Parameters among patients with Chronic Obstructive Pulmonary Disease Admitted In Sree Mookambika Medical College Hospital, Kulasekharam".** This is a bonafied work done by **Adlin Prabha P.R. II year Msc(N),** Sree Mookambika College of Nursing, Kulasekharam under the guidance of **Prof. Mrs. Ajitha Rethnam, M.Sc(N), M.B.A, Ph.D. (N) HOD Medical and Surgical Nursing** in partial fulfillment of the requirement for the degree of master of science in nursing under the Tamilnadu Dr. M.G.R University, Chennai.

Place: Kulasekharam
Date: 10.02.2016

Principal
Sree Mookambika College of Nursing
Kulasekaram

Declaration

I hereby declare that the present dissertation titled **"Effectiveness of Interventional Package on Pulmonary Functional Parameters among patients with Chronic Obstructive Pulmonary Disease Admitted in Sree Mookambika Medical College Hospital, Kulasekharam".** is the outcome of the original research work under taken and carried out by me under the guidance of **Prof. Mrs. Ajitha Rethnam, M.Sc(N), M.B.A, Ph.D. (N) HOD Medical and Surgical Nursing,** Sree Mookambika college of Nursing Kulasekaram. I also declare that the material of this has not formed in any way, the basis for the award of any degree or diploma in this university or any universities.

Dlace: Kulasekharam

Date: 10.02.2016

Mrs. Adlin Prabha P.R.

II year MSc (N)

SMCN

Certificate

This is to certify the dissertation **"Effectiveness of Interventional Package on Pulmonary Functional Parameters among patients with Chronic Obstructive Pulmonary Disease Admitted In Sree Mookambika Medical College Hospital, Kulasekharam".** This is a bonafied work done by **Adlin Prabha P.R, II year Msc(N),** Sree Mookambika College of Nursing, Kulasekharam under the guidance of **Prof. Mrs. Ajitha Rethnam, Msc(N), Ph.D, (N) HOD of Medical Surgical Nursing** in partial fulfillment of the requirement for the degree of master of science in nursing under the Tamilnadu Dr. M.G.R University, Chennai.

Place: Kulasekharam

Date: 10.02.2016

HOD of Medical Surgical Nursing

Sree Mookambika College of Nursing

Kulasekaram

Acknowledgement

As I have approached to the successful completion of the study, I am extremely happy to recall many persons, to whom I am indebted for their contribution in various ways directly and indirectly. I offer my sincere thanks to all those who have helped me in this endeavor.

I owe my success to the **God Almighty** for having given me strength and courage to overcome the difficulties and complete this dissertation successfully.

It's my honour to thank our Chairman **Dr. Velayuthan Nair M.S**, and Director **Dr. Rema.V.Nair M.D**., D.G.O for their encouragement and support for the successful completion of the study.

I express my deep sense of gratitude and heartfelt thanks to **Prof.Mrs. Santhi LathaM.Sc (N)**, MA, Ph.D(N) Principal of our college, who devoted her valuable hours in solving our doubts and providing meticulous attention and skillful guidance in various stages of study.

My special thanks to **Dr.T.C.Suguna M.Sc(N),MA(socio)Ph.D** class coordinator Sree Mookambika College of Nursing for rendering valuable guidance, suggestion and direction to complete this study.

I acknowledge my sincere gratitude to **Prof. Mrs. Ajitha Rethnam M.Sc(N), MBA, PhD HOD of Medical and Surgical Nursing**, Sree Mookambika College of Nursing, Kulasekharam for all the support , direction and guidance for the successful completion of the study. Without doubt I will look back with fond memories and

nostalgia on my time under your supervision, characterized always by latitude, trust, stimulation, enthusiasm and continual support.

I am deeply obliged to **Mrs. Adlin Sujitha M.sc[N] Associate Professor M.Sc [N] Department of Medical and Surgical Nursing, Mrs.Adlin Shynija, M.Sc (N), PhD Associate Professor, Mrs. Adlin Kavitha M.Sc (N) Assistant Professor, Mrs. Selva Rani M.Sc(N), Assistant Professor,** Department of Medical and Surgical Nursing, Sree Mookambika College of Nursing, Kulasekharam, for all the suggestions and guidance rendered by them for the perfection of the study.

I am thankful to **Dr.Kani Raj Peter, M.D Professor** and **Head of the Department of Medicine,** Sree Mookambika Institute of Medical Sciences, Kulasekharam who gave valuable suggestion for consistent help, and guidance to complete this study.

I express my sincere thanks to **Prof. Mr. Kumar** Bio statistic Department, Sree Mookambika Institute of Medical Science for his valuable suggestion and correction in time.

My special thanks to all the **faculty members** of Sree Mookambika College of Nursing for their motivation, encouragement and immense support given through out the study.

I express my sincere thanks to the experts who contributed their valuable time and effort toward validating the tool for the study.

My heartful thanks to **Librarian and Assistant librarian** for their support and cooperation.

My special thanks to all the **participants** who enthusiastically participated in the study and co-operated whole heartedly.

I extend my heart full thanks to all my beloved **classmates and seniors** for their direct & indirect support concern and help to make this attempt an interesting one.

I am very thankful to **Mr. Satheesh Kumar and Mrs. L. Alphonsa, Good Morning Xerox, Kulashekaram** who helped me to bring this study in a printed form.

I am failing in my duty, if I don't thank my Beloved Husband **Mr. Berlin**, and all my family members for their invaluable sacrifice and constant encouragement throughout the course of the study.

Finally the investigator thanks all those who inspired to undertake this topic confidently and full fill this dissertation in time.

INVESTIGATOR

List of Contents

Table to continued ……..

List of Tables

List of Tables continued …….

No		
9	Comparison of mean in experimental group on Modified Dyspnoea Borg scale	62
10	Comparison of mean in experimental group on Spirometer	64
11	Comparison of mean in experimental group on Chest Expansion	66
12	Comparison of mean in experimental group on Breath Holding time	68
13	Association between the pulmonary functional parameters and selected demographic variables	70

LIST OF FIGURES

List of Figures continued ……..

List of Figures continued ……..

List of Appendices

Abstract

Chronic Obstructive Pulmonary Disease is very common in general population. It is a slowly progressing disease involving the airways or pulmonary parenchyma resulting in airflow obstruction. The most common factor leading to COPD is cigarette smoking, exposure to occupational dust and chemicals. The symptom of COPD ranges from dyspnoea, chronic cough with or without sputum production. Interventional package containing education and deep breathing exercises improved the health status and increased the exercise tolerance of patients with COPD. The main objective of the study was to determine the effectiveness of interventional package on pulmonary functional parameters among patients with chronic obstructive pulmonary disease in experimental group. The research design adopted was quasi experimental with two group pre test post test design. Purposive sampling technique was followed to obtain a sample of 60 COPD patients (30 COPD patients in experimental groups and 30 COPD patients in control groups) Pre test and post test assessment was done by using pulmonary functional parameters.

Interventional package containing educational phase was provided for 15-20 minutes daily and deep breathing exercises were administered 2 cycles per day for 7 days to the experimental group whereas control group was not given any intervention. Post test was conducted after intervention both experimental and control group on day 7. The study reveals that they improves the pulmonary functional parameters after intervention, than in the control group. The t value of difference of comparison mean of pulmonary function tabulated was found to be $t=28.45$, $df = 59$ $P<0.05$. The study also shows that there is an association between age, history of smoking, family history, the conclusion of the study shows that interventional package is found to be an effective non pharamacological therapy to improve lung function

Key words : Interventional package, Pulmonary functional parameters, COPD patients.

CHAPTER - I

Introduction

“Breath is the finest gift of nature, Be grateful for this wonderful gift”.

- Amit Ray

Chronic Obstructive pulmonary Disease is a major cause of ill health globally. World COPD Day is 19 November 2015. COPD is found to be one of the most distressful conditions badly affecting human life. COPD is the fourth leading cause of death in the United States. The disease is characterized by an abnormal inflammatory response in the lungs and restricted airflow. The disease typically occurs after age 35. Every six seconds people with serious respiratory disease are reminded that their breathing is impaired and they cannot enjoy life as they used to as their activities are restricted and that their lives may not be as long (COPD University of Mary land report 2008).

According to WHO estimates, 65 million people have moderate to severe chronic obstructive pulmonary disease. More than 3 million people died of COPD in 2005, which corresponds to 5% of all deaths globally. COPD is the third leading cause of death in the United Status. More than 11 people have been diagnosed with COPD, but an estimated 24 million may have the disease without even knowing it. COPD causes serious long term disability and early death (WHO Burden of COPD 2015).

The potential outcome of COPD is progressive deterioration in lung function as a result of persisting lung inflammation in response to inhaled pollutants, chiefly

tobacco smoke (Pawls et al 2001). This process results in the eventual development of chronic symptoms which may eventually become disabling (celli et al 2004).

The hallmark symptom of COPD is shortness of breath that gets worse overtime. It is often accompanied by a phlegm producing cough and episodes of wheezing. Late severe symptoms include rapid, labored breathing and persistent craving for air hunger even during rest or after minimal physical activity. About 75% of patients have chest pain. Nearly half of COPD patients report some limitation in daily activities. They have trouble walking up stairs or carrying even small packages. They also have poor nutrition. So they tend to be underweight (University of Mary land report 2008).

Nicolas Roche et.al (2013) conducted a study among COPD symptoms including dyspnoea and sputum production affect patients quality of life and limit their ability to carry out even simple morning activities. The development of validated patient reported questionnaires to capture patient's experience of COPD symptoms is therefore vital for establishing effective and comprehensive management strategies.

COPD medicines cannot cure COPD, but they can improve symptoms. Different kinds of COPD medicines are available such as bronchodilators to treat shortness of breath, corticosteroids to prevent COPD flare ups, antibiotics to treat infections and supplemental oxygen to boost up oxygen levels. Even though several pharmacological agents are available to reduce the symptoms of COPD, but continuous therapy is associated with many side effects such as tachycardia, palpitation, gastro, Oesophageal reflux disease immune suppression, hyperglycarmia, Osteoporosis, muscle cramps, gastrointestional upset and renal failure (Lewins et al. 2004).

Interventional package contains educational phase and deep breathing exercises reduces the frequent dyspnoea and improves relaxation and pulmonary function. Limited empirical documentation exists to support the effectiveness of a nurse managed rehabilitation programme for older patients with COPD (MC Carthy B, Casey D etal 2015 Cochrane library).

Helen Shaji, John Cecely et al (2008) conducted a study to assess the effectiveness of breathing exercises on pulmonary function parameters and quality of life of patients with COPD. After undergoing breathing exercises in the experimental group the level of dyspnoea was significantly reduced ($P < 0.001$) and there was significant improvement in the quality of life and pulmonary functional parameters. So deep breathing exercises is an effective and economical method for improving the physical capacity and general well being of patients with COPD.

Cigarette smoking remains the major cause of COPD. In most studies, smoking accounts for about 80% of COPD cases, other causes such as genetic syndromes, exposures to pollutants such as dust, irritants and fumes are also involved in the development of the disease. The typical COPD patients is a current or former smoker over age 50. People who smoke both tobacco and marijuana for nearly three times the risk of developing COPD. Breathing in secondhand smoke may also increase the risk for COPD because the irritants from cigarette smoke get into the lungs (University of Mary land report 2008).

Sophie Coronini – Cronberg et.al (2011) conducted a study to review the effectiveness of smoking cessation interventions for COPD patients. A study that compared an intensified smoking cessation programme in less severe COPD patients.

This review suggest how smoking cessation support for COPD patients could be improved to increase quit rates.

An overall treatment strategy may include one or several medications, lifestyle changes, education, pulmonary rehabilitation, oxygen therapy and perhaps surgery. Breathing training, Disease education, Exercise, Nutritional advice, and Psychological assessment are tailored to individual patients (University of Mary land report 2008).

Cindy et al (2013) showed that proposed as exercise training regimen of three times per week showed a significant increase in physical activity.

Promotion of exercises is found to be the good conservative management for patients with COPD, because educational phases and breathing exercises can improve lung functions as well as can strengthen the respiratory muscles, even when the lungs are diseased. The proposed rationale for using interventional package for COPD patients are to prolong exhalation and thereby improve pulmonary functions (Sin et al 2003).

Background the Study

COPD research is on the up. Over the last six years more than 35000 patients have participated in COPD research studies supported by NIHR clinical research network. COPD is an important public issue in many countries which is estimated to become the fifth cause of disability and the third causes of mortality within 2020. In COPD viscid secretion in peripheral airways is a major mechanism of airway obstruction.

The shortness of breath experienced by people with COPD can interrupt daily activity, sleep patterns and the ability to exercise. People without the condition.

Lin. YU, Liao, Kuci – Minchen et al 2015, conducted a study to evaluate the effects of a respiratory rehabilitation exercise training package among hospitalized elderly patients with acute exacerbation COPD. A randomized control trial was conducted. 61 elderly in patients with AECOPD were performed. 30 received respiratory rehabilitation exercise training twice a day, 10-30 mts per session for 4 days. This reduces the cough and sputum expectoration increased significantly compared with those for the patient in the control group. This study results revealed that exercise training package early in reducing the episode rate in patients with AECOPD.

Naglaa Bakry Elkhateeb, Ahmed A, Elhadidi et al (2015) evaluated the role of pulmonary rehabilitation program to improve the functional capacity among COPD patients. The study was performed on forty five patients. 15 patients on medical treatment and 30 patients on medical treatment in addition to pulmonary rehabilitation program. This study showed the presence of statistically significant difference between the control group and respiratory training group.

MC Carthy B, et al (2006) compared the effects of pulmonary rehabilitation versus usual care on health related quality of life and functional maximal exercise capacity in persons with COPD. They selected 65 randomised controlled trials involving 3822 participants with COPD. They provided pulmonary rehabilitation as exercise training for atleast four weeks with or without education or psychological support. In which control group was not given education or intervention. The result revealed that statistically significant improvement.

Over all COPD poses a common growing and significant challenge for patients. Results of emerging studies will likely lead to enhancements in current

management and new paradigms in managing patients with COPD. Thus, Increasing awareness of COPD and management of initiatives have changed the outcomes in COPD.

Need and Significance for the study

"Exercise is a medicine for creating change in a person's physical, emotional and mental status" (Carol Welch).

COPD is the leading cause of breathing disability in the world. COPD is caused mainly by smoking, but also by exposure to airborne pollution, to harmful fumes or particles at home or at work, or by a inheriting a genetic a genetic deficiency (Puntuieri et al. 2009, Barnett 2012).

COPD is the 5th biggest killer disease worldwide. Every hour COPD is estimated to kill over 250 people worldwide. The WHO estimates that in 2000, 2.74 million people died of COPD worldwide. According to WHO, passive smoking carries serious risks, especially for children and those chronically exposed. WHO estimates that passive smoking is associated with a 10 to 43 percent increase in risk of COPD in adults (World Health statistics 2008).

Global Mortality data from the WHO World Health Repot (Who 2002) show that COPD mortality rates were higher in men for almost all regions.

COPD is the third leading cause of death in the U.S. It is estimated that there may currently be 16 million people in the United States currently diagnosed with COPD (COPD statistics US information 2008).

In 2011, 12.7 million U.S adults were estimated to have COPD, In 2011, an estimated 10.1 million Americans reported a physician diagnosis of chronic bronchitis, of the estimated 4.7 million Americans ever diagnosed with emphysema 92% are 45 or older (COPD statistics US information 2008).

In India NCDS were estimated to have accounted for 53% of all deaths and 44% of disability adjusted life years lost in 2005. Of these chronic respiratory disease accounted for 7% deaths and 3% disability. Crude estimates suggest there are 30 million COPD patients in India. India contributes significant and growing percentage of COPD mortality which is estimate to be amongst the highest in the world. The overall prevalence of COPD was 4.36%. The prevalence among males and females were 5.32% and 3.41% respectively. Approximately 20% to 30% of smokers will ultimately develop COPD (Koul P A COPD Indian guidance Lung India 2013).

Thiruvengadam et.al in 1977 from Madras (South India) reported the prevalence of COPD of 1.9 percent in males and 1.2 percent in females Ray et.al in 1995 from South India found that the prevalence was 4.08 percent in males and 2.55 percent in females. The overall prevalence of chronic bronchitis in adults > 35 year was 3.49 percent ranging 1.1% in Mumbai to 10% in Thiruvananthapuram. Based on this study the nation burden of chronic bronchitis was estimated as 14.84 million.

COPD is a growing epidemic and remains a major public health problem. The overall prevalence of COPD is estimated to be in the vicinity of 4 – 5% in our country. (Indian J Endocrinol Metab. 2014)

The investigator during my clinical practice had come across many patients with COPD. And realized that the dyspnoea among COPD patients are very much

distressing to their families and it lead the family in a social – economic crisis and further impair the quality of life. Therefore this – study was taken into consideration.

In order to get relieve from an dyspnoea pulmonary rehabilitation programs to improve the health status and increase the exercise tolerance of patients with COPD (Sin et al 2003)

Statement of Problem:

"A study to assess the effectiveness of interventional package on pulmonary functional parameters among patients with chronic obstructive pulmonary disease admitted in Sree Mookambika Medical College Hospital, Kulasekharam".

OBJECTIVES

1. To asses the pulmonary functional parameters among patients in experimental and control group before implementing the interventional package.
2. To assess the pulmonary functional parameters among patients in experimental and control group after implementing the interventional package.
3. To determine the effectiveness of interventional package on pulmonary functional parameters.
4. To find out the association between the pulmonary functional parameters and the selected demographic variables of patients with COPD.

HYPOTHESIS

H_1. There will be a significant improvement in the pulmonary functional parameters among patients in the experimental group after receiving interventional package than in the control group.

H_2. There will be a significant association between the pulmonary functional parameters and selected demographic variables among patients with COPD

OPERATIONAL DEFINITION

EFFECTIVENESS

In this study Effectiveness refers to the extent to which interventional package enhance the pulmonary functional parameters such as forced expiratory capacity, Chest expansion, breath holding time and inspiratory capacity of patients with COPD as measured by pulmonary assessment tool such as inch tape, stop clock, and incentive Spirometer.

INTERVENTIONAL PACKAGE

It refers to the package with the interventions consist of Educational phase and deep breathing exercises which will be administered for the patients with COPD.

Educational phase for 15 – 20 minutes daily.

Deep breathing exercises will be administered 2 cycles per day for 7 days.

PULMONARY FUNCTIONAL PARAMETERS

It refers to variables reflecting the status of pulmonary function which includes chest expansion, using inch tape, inspiratory capacity using spirometer, breath holding time using stop clock, dyspnoea assessment using dyspnoea borg scale techniques.

COPD

It refers to the clients having air flow limitation, dyspnoea, cough and sputum production between the age group 35 – 75 years who have got admitted in Sree Mookambika Hospital.

ASSUMPTIONS

The study assumes that,

1. All COPD patients will have dyspnoea due to pathophysiological changes such as hypoxaemia and hypercapnia (Lewis et al 2004)
2. Interventional package may improve pulmonary functions.

VARIABLES

Dependant variable:

Pulmonary functional parameters.

Independant variable:

Interventional package

DELIMITATIONS

1. Patients with COPD who are willing to participate in the study.
2. Patients with COPD with the age group of 35 to 75 years only.

Ethical clearance

The proposed study was conducted after the approval of the college research and ethical clearance committee. The permission to conduct study was obtained from

the Medical department of Sree Mookambika Medical College Hospital and director of the institution and Assurance of confidentiality was given to the subject and oral consent was taken.

CONCEPTUAL FRAME WORK

The conceptual frame work adopted for the present study is based on Lydia.E.Hall's care core and cure model (1994). She considered a basic philosophy of nursing upon which the nurse the aorist; Lydia E. Hall is unique in that her benefits in nursing were demonstrated in practice. Hall presented her theory of nursing visually by drawing three interlocking circles (i.e) core, care and cure. The professional nurse identifies that the patient needs nursing interventions to promote pulmonary function. The researcher decides to observe the lung capacity with spirometer and dyspnoea borg scale and to give interventions using teaching modules and deep breathing exercises for experimental group respectively. Conceptual frame work is the group of concepts and a set of propositions that spells out the relationship between them. Polite and Hungler(1999) states that a conceptual frame work is interrelated concepts that are assembled together in some rational scheme by virtue of their relevance to common theme. The purpose is to make research meaningful and generalize.

Core:

Core circle of patient care is based on the concept that patient looks at an explore feelings regarding his or her current health status and potential changes. (ie) core circle deals with patient problems. In the present study core part deals with COPD patients degree of dyspnoea, cough and sputum productionexperienced by age group 35 to 75 Years.

Care:

Care circle represents the nurturing component (ie) the concept of mothering (case and comfort of In this study patients. The researcher decides to observe the lung capacity with spirometer, dyspnoea borg scale, chest expansion by inch tape and breath holding time by stop clock and to give interventions using teaching modules and deep breathing exercises for experimental group respectively.

Cure:

Cure circle of patient care is the evaluation of the pathological and therapeutic sciences applied by the health team members. In this study cure part deals with the response of the care provided for the study subjects by the investigator. (ie) reduction in the level of dyspnoea and enhance ease in breathing pattern and improve the pulmonary function

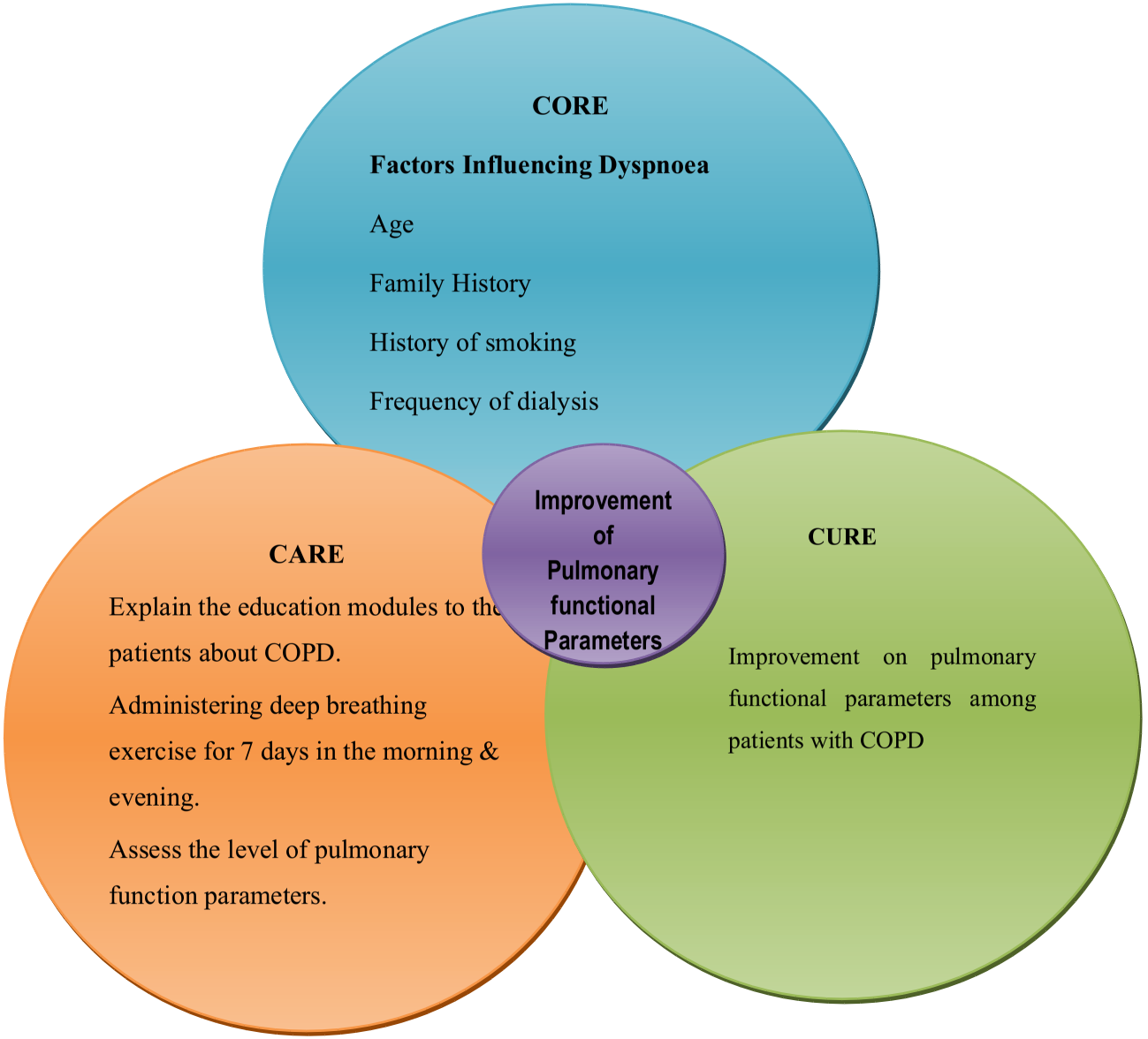


Figure 1: **Lydia E Hall's Core, Care Cure and Model (1994)**

CHAPTER - II

Review of Literature

Review of Literature is an essential part of any research study. It familiarizes the investigator with previous investigation related to ones field of interest and the various methods and procedures, which can be pursued. It also provides an opportunity to locate related information of interest. Thus it offers general guidelines for the execution of the research studies. A survey of literature thus becomes the vital part in any research of endeavour. It helps to lay the foundation for a study and also plays a role.

This chapter is discussed into the following headings.

1. Studies related to prevalence and incidence of COPD
2. Studies related to interventional Package on COPD

Studies related to prevalence and incidence of COPD

Ana S.M. Afonso et. al (2011) conducted a population based study among patients with COPD. The age group more than 40 and having smoking history more than 12 months. The data were collected in Dutch IPCT database using two step validation algorithm. Among 185, 325 participants 7308 subjects with COPD had incident & COPD. They found that the incidence of COPD was higher in men (3.33 – 3.77) than in women (2.17 – 2.52). Also they reported that the overall baseline prevalence of COPD was 3.02%. Thus they concluded that the true incidence of

COPD may be 30-40% higher in Netherlands Early intervention emphasize the need for better primary and secondary prevention in patients with COPD.

Graciane Laender Moreira et al, (2003) Sao Paulo Brazid) conducted a study to determine the under diagnosis rate in new COPD cases. They done the nine – year follow up period through the platino study. 613 participated in the follow up phase. Rates were assessed with the chi-square test and for numerical variables they used the t-test. They found that 70.0% of the incident COPD cases and 62.3% of all COPD cases. They concluded that the underdiagnosis rate in new COPD cases identified during the follow up phase was 70.0%. So they reported the need awareness about COPD in primary health care clinics.

Zeliha ARslan et al., (2012), Turkey conducted a study to establish the prevalence of COPD. They conducted a cross sectional study using a spirometry and the basic Bold questionnaire. A total of 946 patients aged 40 years and over were participated in this study. They found that the prevalence of stage I or higher COPD was 13.3% (8.7% for women and 16.5% for men) and the prevalence of COPD at Gold stage II or higher was 7.1% (4.1% for women and 9.2% for men). They noted a high prevalence of COPD in never smokers. They concluded that occupational exposure may have a significant role in COPD development because of the high COPD prevalence in the non – smoking population.

Evrim Eylem Akpinar (2013) Turkey conducted a study to determine the prevalence of COPD patients. They done a prospective study using clinical risk assessment. A total of 172 patients were participated in the study. The data was analyzed using chi-square test and Man – Whitney U test. The present study showed that the mean age was 71.31 ± 9.62 years. 142 patients (82.6%) were male and 30

patients (17.4%) were female. This showed that the prevalence rate was 29.1%. They concluded that the prevalence was higher so they need awareness to prevent the development of COPD exacerbation.

Catherine E Rycroft (2012) Germany conducted a study to qualify the burden of COPD. They done a structured and comprehensive literature search. A total of 19 articles were identified and reported data. The reported prevalence of COPD ranged from 0.2% in Japan to 37% in the USA. Also reported that 2.3% and 8.4% of all deaths were caused by COPD. They concluded that COPD mortality increased over time, rates were delined because of improvements in COPD management.

Ron Halbert et al (2008) Mexico to determine the prevalence of COPD examined by a population based study. They done a platino study using a cross sectional design of the total of 5529 individuals 758 had COPD and 86 of them had been previously diagnosed by doctors. Data were collected using questionnaire and underwent post bronchodilator spirometric measurements. Results shown that 43% having used inhaled medication and 36% had used bronchodilators. Data were analyzed using Mann – Whitney U test and P value of < 0.05 were statistically significant. In conclusion they found that spirometric measurements emerged not only as a diagnostic tool, but also a factor associated with treatment.

Studies related to interventional Package on COPD

Scherer et al, (1998) conducted a study of COPD patients to determine the effects of two intervention strategies. They used a quasi experimental two group pre post test design. 34 patients were included in this study 26 men and eight women were recruited pulmonary rehabilitation program were provided in two phases. This phase inchildren 36 sessions of three times a week for 12 weeks duration. Results showed

that there was a significant increase in the training program (P<0.01). They concluded that self management and rehabilitation programs improved the quality of life among patients with COPD.

Lemmense et al (2009) conducted a study to evaluate the effect of a patient education intervention designed to increase patients understanding of COPD self management strategies. They used a quasi – experimental one group pre post test design. 189 patients were included in this study. They taught self management strategies and given booklets during multiple 15 minute over a 12 month period. Results were analyzed using a paired t –test anlysis. Results showed no statistically significant change over the 12 month period. (pre test 4.24 (± 0.74) post test 4.23 (± 0.78).

Finnerty JP et al (2001) conducted a study among COPD patients. They provided a pulmonary rehabilitation program and patients were assessed by questionnaire method. They used a randomized, prospective parallel group controlled study. Of 65 patients with COPD 44 men and 21 women. They provided a 6 week program of education (2 hourly) and exercise (1 hour) results showed that experimental group was 59.9 and control group showed 59.3. They concluded that 6 week outpatient based program significantly improved quality of life of patients.

Barakat et al (2008) conducted a study to evaluate on entirely outpatient based program of pulmonary rehabilitation in patients with COPD. 80 patients were recruited in this study using St. George's Respiratory questionnaire and 6 minutes waling test. Datas were collected using a prospective, parallel group controlled study. They provided a 14 week rehabilitation program (3 hours / week, 1.5 hrs of education

and exercise and 1.5 hrs of cycling). Results showed that outpatients based program improved the quality of life of patients with COPD.

Mathew, Jyothy Disilva, Fatima et al (2011), conducted a study among COPD patients to determine the effectiveness of deep breathing exercise of 40 patients 20 patients received treatment and 20 patients as control group. They used a true experimental design. Deep breathing exercises was provided to the experimental group 2 times per day for a total of 7 days. On the 7^{th} day they reassessed the patients in the control and the experimental group. The results showed the mean score is 23.80 and 26.80 respectively whereas 7.70 and 6.90 ($P<0.05$) for the control group. The study concluded that deep breathing exercise is effective in improving pulmonary parameters.

Foglio K, et al (2007) conducted a study to evaluate the long tern course of outcome indexes in patients with COPD, undergoing pulmonary rehabilitation programs. They used prospective, observational study design. 48 COPD patients were included in the study. Datas were collected using St. George's Questionnaire. Results showed $P<0.001$ and exercise tolerance improved. In concluded that these programs elicited significant improvement in exercise capacity, dyspnoea.

Carone M. et al (2007) conducted a study to evaluate the effectiveness of pulmonary rehabilitation among COPD patients. In this study they used a multi – centre study. They assessed lung function, arterial gases, Walk test, dyspnoea and quality of life. 1047 COPD patients were evaluated. After receiving treatment all parameters were improved. This study concluded that pulmonary rehabilitation program is effective among COPD patients.

Mota S. et al (2007) conducted a study to investigate the effective of expiratory training among COPD patients. 16 patients were in this study. In this study they found that 8 weeks of pulmonary rehabilitation program that foused on breathing exercises consisting of diaphragmatic breathing techniques, effective cough training and on soft techniques for releasing shoulder and thoracic muscles and fascias showed improved chest mobility and increased values of maximal inspiratory and expiratory mouth pressure after the pulmonary rehabilitation programme.

Raksha Thakrar et al (2013) conducted a study to determine current awareness about the disease and pulmonary rehabilitation among COPD randomized. They provided a 5 week programme (30 min session breathing through an expiratory threshold valve 3 times per week). They used and collected information by St. George's Respiratory !uestionnaire. After receiving treatment lung function, exercise capacity, sysmptoms and quality of life significantly improved.

Katerina Burianova et al (2008) studied to find out if pulmonary rehabilitation programme can influence the maximal aspiratory and expiratory mouth pressure and chest mobility among COPD patients. 23 patient were included patients. They done a cross section survey through a COPD awarness questionnaire. 300 patients were recruited of which 282 were included in the study. The mean age was 63.54 and pulmonary rehabilition was 25.14%. This study concluded that the education of patients and rehabilitation improved their self management skills and their quality of life.

CHAPTER - III

Methodology

This chapter depicts the description and varies steps adapted to collect and organize data for the presents study. The study was intended to assess the effectiveness of interventional package on pulmonary functional parameters among chronic obstructive pulmonary disease (COPD) patients.

The research methodology includes research approach, research design, setting, population, samplings, selection criteria, development of tool, and description of tool, the procedure for data collection and plan for data analysis.

Research Approach:

Research process is an orderly way of dealing with the research problem, where variables are generally studied in numerical form. Research approach used in this study was quantitative evaluative research approach.

Research Design:

Research design used in this study was quasi experimental design (ie) two group pre and post test design.

The research design is diagrammatically represented as below:

E – O_1 x O_2

C – O_1 – O_2

E – Experimental group

C – Control group

O_1 – Pre test assessment of pulmonary functional parameters of patients with COPD

O_2 - Post test assessment of pulmonary functional parameters of Patient with COPD

X_1 - Administration of educational phase and administration of deep breathing exercise

- - No intervention

Variables:

Dependant Variable

Pulmonary functional parameters

Independent Variable

Interventional Package

Demographic Variables

Age, Gender, educational status, occupation, income, marital status, type of family, house, history of smoking and family history.

Setting:

The study was conducted at Sree Mookambika Medical College Hospital, Kulasekharam among the patients with COPD with the age group 35 – 75 years. The Hospital is a 750 bedded multi specialty hospital where the number of inpatients is

approximately 100 patients per day and tentative number of inpatients with COPD is 6 per day.

Population:

Target Population

It consists of all patients admitted with COPD in Sree Mookambika Hospital.

Accessible Populations

The accessible population selected for this study is COPD patients admitted in Sree Mookambika Hospital among the age group of 35 – 75 years.

Method of Sample Selection:

Sample Size

The sample size for this study was 60 between the age group of 35 – 75 years. Among 60, 30 patients allotted to the experimental group and 30 allotted to the control group.

Sampling Technique

Samples were selected based on purposive sampling technique.

Criteria for Sample Selection:

Inclusion Criteria

1. COPD patients within the age group 35 to 75 years.
2. COPD patients who have breathing difficulty and expectoration.

3. Patients who are willing to participate in the study.

4. Patients who are under antibiotic treatment.

5. Patients of both sexes.

Exclusion Criteria

1. Patients with age group < 35 years and > 75 years.

2. Patients who will not willing to participate in the study.

3. Patients with cardiac disease, cancer and other complicating conditions.

DATA COLLECTION TOOL

The tool consists of 6 sections

Section A

Demographic variables such as age, gender, educational status, occupation, income, marital status, type of family, house, history of smoking and family history.

Section B

This section deals with COPD questionnaire which is used to assess the health status among COPD patients. Total score is 100. Out of which we categorized as Mild - below 45, Moderate 45-60, Severe – 60 and above.

Section C

This section deals with Modified Dyspnoea Borg scale which is used to assess the level of dyspnoea among COPD patients. Total score is 8. Out of which we categorized as Mild 0-2, Moderate 3-5, Severe – 6 to 8.

Section D

This section deals with Inspiratory and Expiratory using spirometer which is measured the functional capacity of the lungs among COPD patients. Total score is 6. Out of which we categorized as Mild 6, Moderate 4, Severe 0.

Section E

This section deals with Chest expansion by inch tape which helps to identify the side of abnormality. Total score is 5 inch. Out of which we categorized as Mild 1.5, Moderate 1, Severe below 1.

Section F

This section deals with Breath holding time by stop clock which helps to identify the person has the ability to hold their breath for a particular period of time. Total score is 30 seconds. Out of which we categorized as Mild 20 secs, Moderate 15 secs, Severe below 10.

TESTING OF TOOL

Validity

Content validity of tool wad established on the basis of the opinion of five experts. One from HOD of Medical Department from Sree Mookambika Medical

College Hospital and four medical and surgical nursing personnel. The necessary suggestion and modification was in corporate in the final preparation of tool.

Reliability

The reliability of the tool was identified by inter rated method. The r-value is 0.9. Hence the tool was reliable.

Data Collection Procedure

Data was collected in the medical (male and female wards) of Sree Mookambika Medical College Hospital in the month of October 2015. 60 samples were selected based on inclusion and exclusion criteria. Pre test was conducted to both experimental group and control group by using these assessment tools. Educational phase was provided for 15 – 20 minutes daily and deep breathing exercises were administered 2 cycles per day for 7 days for the experimental group whereas control group was not given any intervention. Post test was conducted after intervention both experimental and control group on day 7.

Plan for Data Analysis

Data analysis was done by using descriptive and inferential statistics to assess the level of health status among COPD patients. Inferential Statistical methods tike ‘t’ test and ‘chi square test’ were used to find out the effectiveness and association between variables.

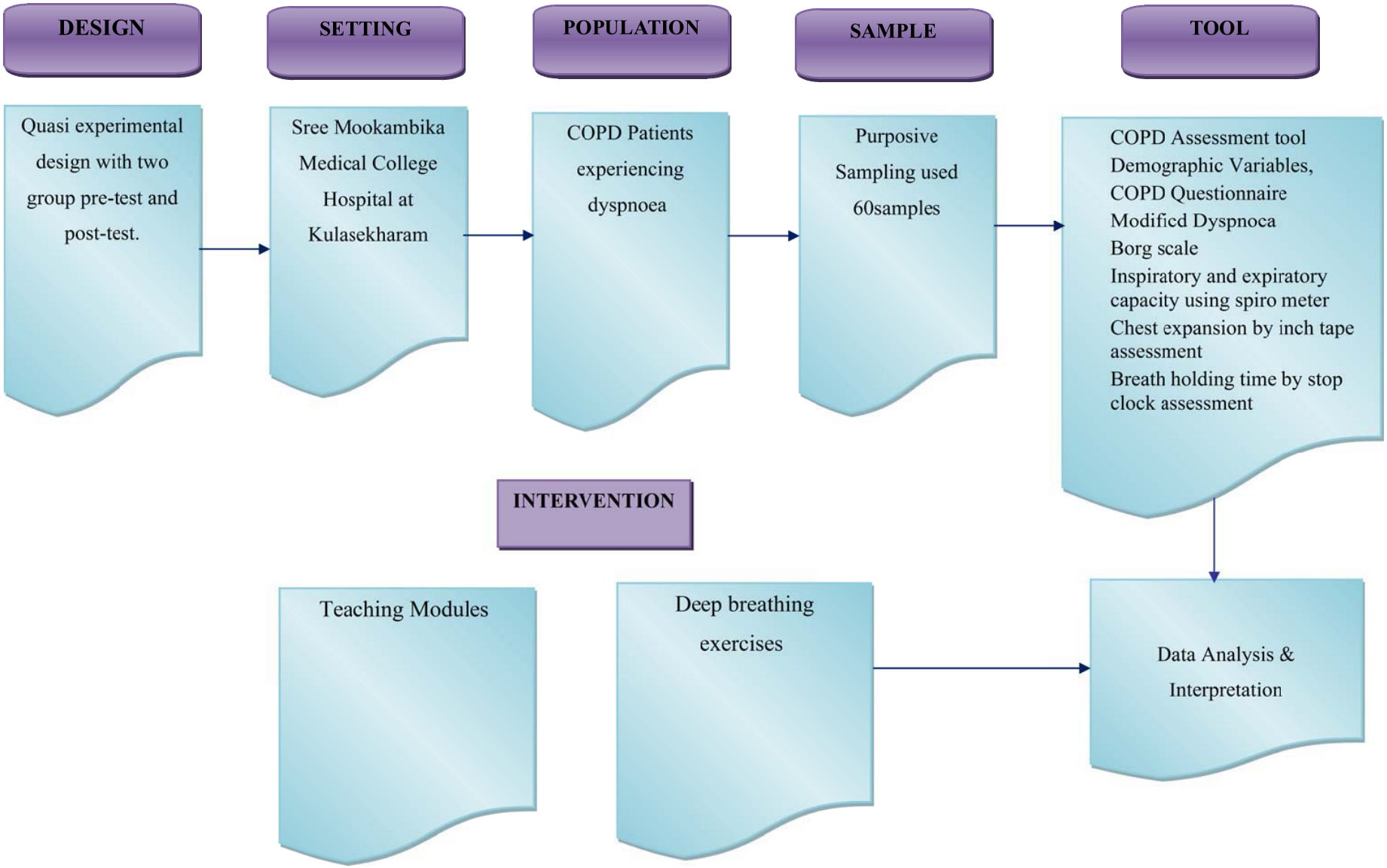


Figure 2 : **Schematic Representation of Research Design**

CHAPTER - IV

Data Analysis And Interpretation

This chapter deals with the analysis and interpretation of data collection in accordance with the objectives stated for the study. The data collected were analyzed by using descriptive and inferential statistics. The test score was analyzed by statistical mean and standard deviation, the significance difference of mean scores were interpreted by 't' test.

The difference between pre test and post test were assessed by paired 't' test. The association between pulmonary functional para meters and selected demographic variables were analyzed by "chi-square test."

OBJECTIVES:

1. To asses the pulmonary functional parameters among patients in experimental and control group before implementing the interventional package.
2. To assess the pulmonary functional parameters among patients in experimental and control group after implementing the interventional package.
3. To determine the effectiveness of interventional package on pulmonary functional parameters.
4. To find out the association between the pulmonary functional parameters and the selected demographic variables of patients with COPD.

The data collected was tabulated and presented as follows,

Section A

This section displays the demographic variables of the subjects selected by the investigator.

Section B

It deals with the assessment of the pre test and post test level of measurements by using pulmonary functional para meters among COPD patients.

Section C

This section deals with effectiveness of interventional package on Pulmonary functional parameters among patients with COPD.

Section D

This section deals with the Comparison of mean in experimental group of Pulmonary functional parameters among patients with COPD.

Section E

This section deals with the Association between the pulmonary functional parameters and selected demographic variables among patients with COPD.

Section A

This section displays the demographic variables of the subjects selected by the investigator.

Table 1

Percentage Distribution of study subjects According to Demographic variables N= 60

Demographic variables	Experimental group		Control group		Total		x^2
	f	%	f	%	f	%	
Age Group							
35 – 45 yrs	4	13.33	3	10.00	7	12	
46 – 55 yrs	10	33.33	9	30.00	19	32	
56 – 65 yrs	9	30.00	11	36.67	20	33	9.38
66 – 75 yrs	7	23.34	7	23.33	14	23	
Gender							
Male	16	53.33	17	56.67	33	55	
Female	14	46.67	13	43.33	27	45	1.15
Education							
Primary	4	13.33	3	10.00	7	12	
Middle	7	23.33	8	26.67	15	25	
SSLC	8	26.67	9	30.00	17	28	1.33
Higher Secondary	6	20.00	6	20.00	12	20	
Nil	5	16.67	4	13.33	9	15	

Table One Continued ……

Demographic variables	Experimental group		Control group		Total		x^2

	f	%	f	%	f	%	
Occupation							
Sedentary	16	53.33	17	56.67	33	55	3.45
Non – Sedentary	14	46.67	13	43.33	27	45	
Income							
Rs. 15000	7	23.33	7	23.33	14	23	
Rs. 8000	16	53.34	17	56.67	33	55	2.79
Rs. Below 5000	7	23.33	6	20.00	13	22	
Marital status							
Single	0	0	0	0	0	0	0
Married	30	100	30	100	60	100	
Type of Family							
Nuclear	21	70	20	66.67	41	68	0.025
Joint	9	30	10	33.33	19	32	
Type of House							
Pucca	9	30	10	33.33	19	32	
Tiled	10	33	9	30	19	32	1.39
Thatched	0	0	0	0	0	0	
Concrete	11	36.67	11	36.67	22	36	
History of Smoking							
Yes	20	66.67	19	63.33	39	65	4.28
No	10	33.33	11	36.67	21	35	

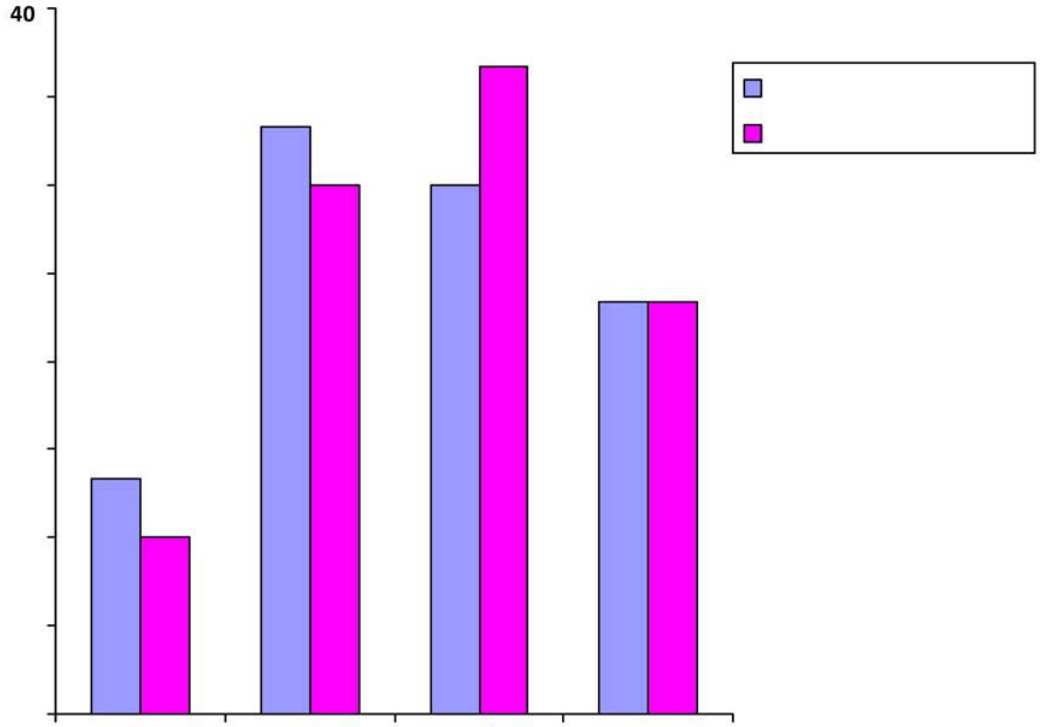
Table One Continued ……

Demographic variables	Experimental group		Control group		Total		x^2
	f	%	f	%	f	%	
If yes							
Active Smoker	20	100	19	100	39	0	
Passive Smoker	0	0	0	0	0	0	
Family History							
Allergy	11	36.67	12	40	23	38	4.96
Lung disease	9	30.00	10	33.33	19	32	
Heart disease	10	33.33	8	26.67	18	30	

The above table 1 describes distribution in number and percentage of study subjects according to their demographic variables. Out of 60 samples 12% were in the age group of 35 – 45 years, 32% were in the age group of 46.55 years, 33% were in the age group of 56-65 years, 23% were in the age group of 66-75 years. In relation to gender, 55% were Males, 45% were females. Regarding to education, 12% were primary, 25% were middle, 28% were SSLC, 20% were Higher Secondary and 15% had no education. In relation to Occupation, 55% were sedentary workers, 45% were Non – sedentary workers. Regarding income 23% had 15000, 55% had 8000, 22% had below Rs. 5000 income. In relation to Marital Status 0% were single, 100% got married. Regarding type of family 68% were nuclear 32% were joint family. Regardign to type of house 32% had pucca house, 32% had tiled, 0% had thatched, 36% had concrete house. In relation to history of smoking 65% persons were smokers and 35% were non – smokers. Regarding family history 38% had allergies, 32% had lung disease and 30% had heart diseases.

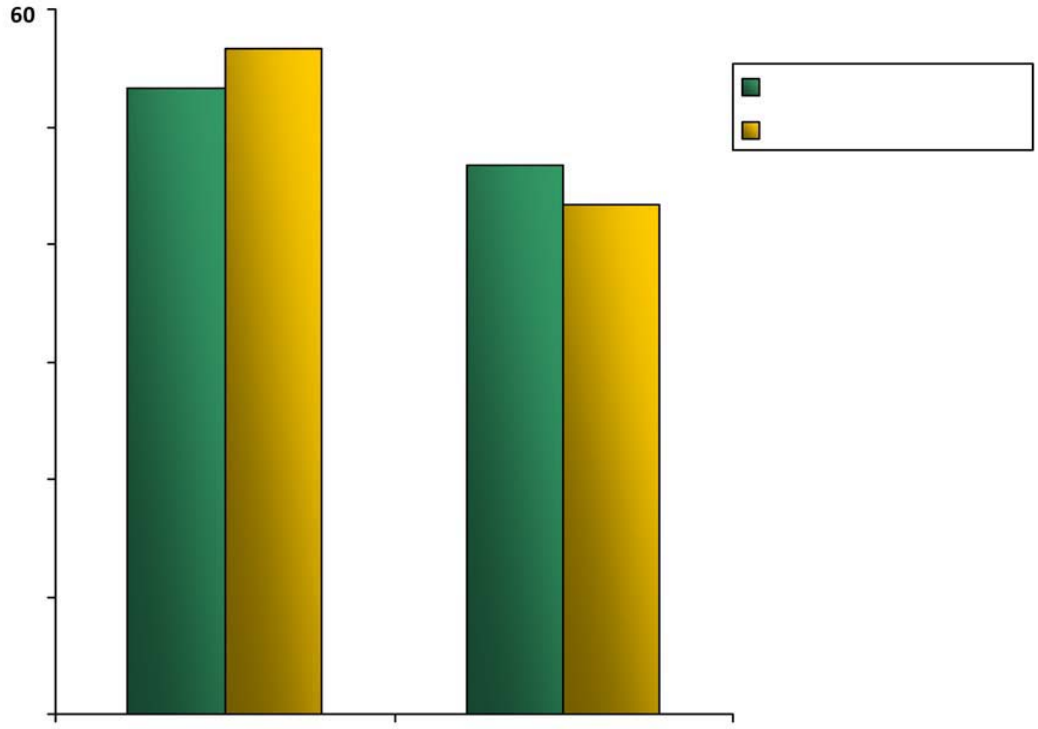
The above findings are presented as figure from,

- Distribution of demographic variables according to age in experimental group and control group presented as bar diagram in figure 3.
- Distribution of demographic variables according to gender in experimental and control group presented as bar diagram in figure 4.
- Distribution of demographic variables according to education in experimental group and control group presented as bar diagram in figure 5.
- Distribution of demographic variables according to Occupation in experimental and control group presented as bar diagram in figure 6.
- Distribution of demographic variables according to income in experimental and control group presented as bar diagram in figure 7.
- Distribution of demographic variables according to marital status in experimental and control group presented as bar diagram in figure 8.
- Distribution of demographic variables according to type of family in experimental and control group presented as bard diagram in figure 9.
- Distribution of demographic variables according to type of house in experimental and control group presented as bar diagram in figure 10.
- Distribution of demographic variables according to history of smoking in experimental and control group presented as bar diagram in figure 11.
- Distribution of demographic variables according to family history in experimental and control group presented as bar diagram in figure 12.



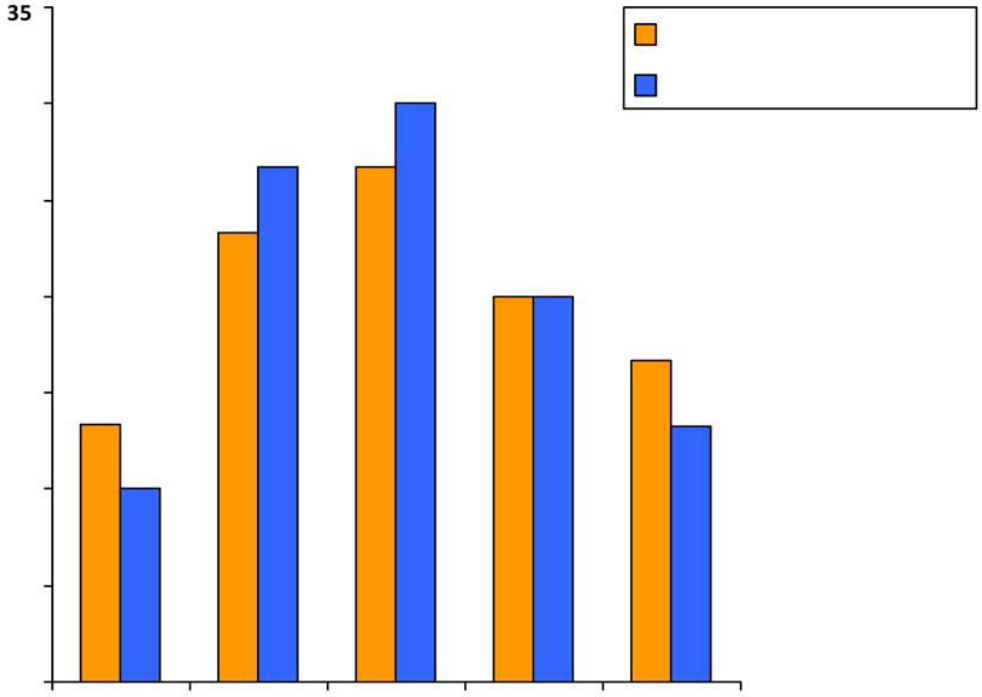
Age

Figure 3 : **Distribution of Sample According to Age**



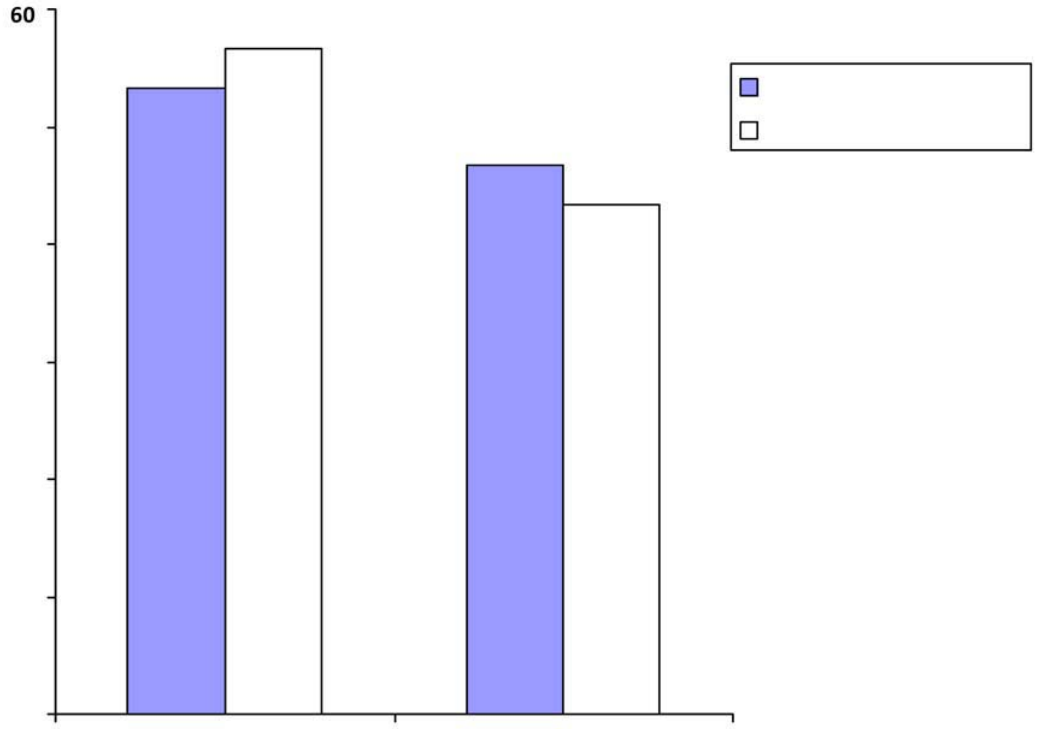
Gender

Figure 4 : **Distribution of Sample According to Gender**



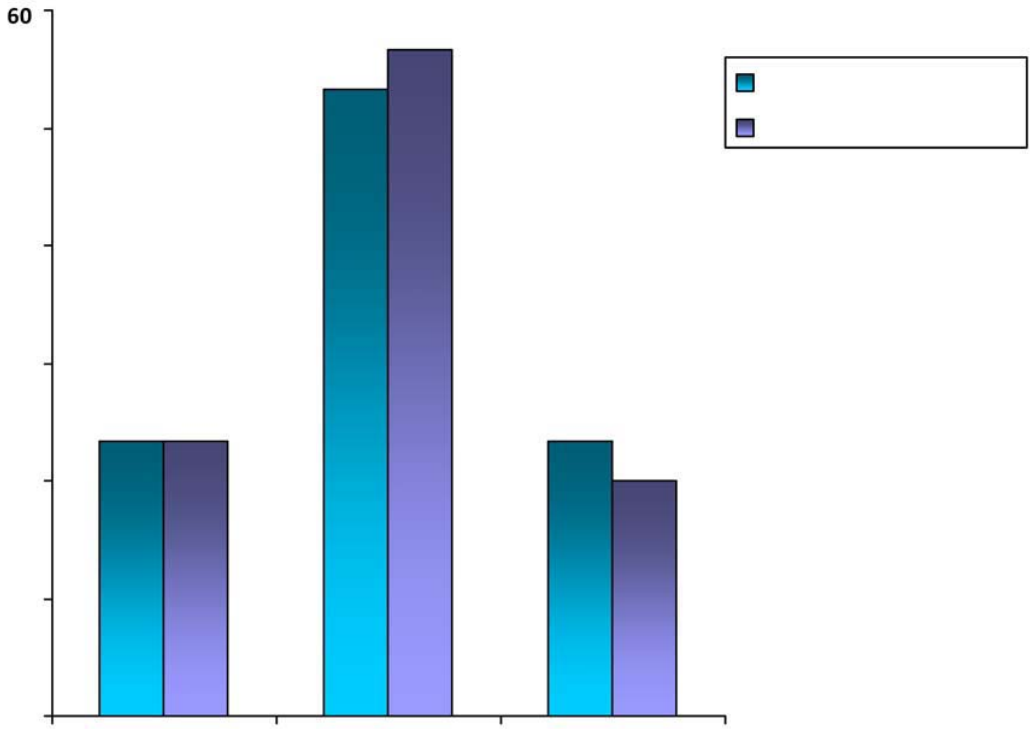
Education

Figure 5 : **Distribution of Sample According to Education**



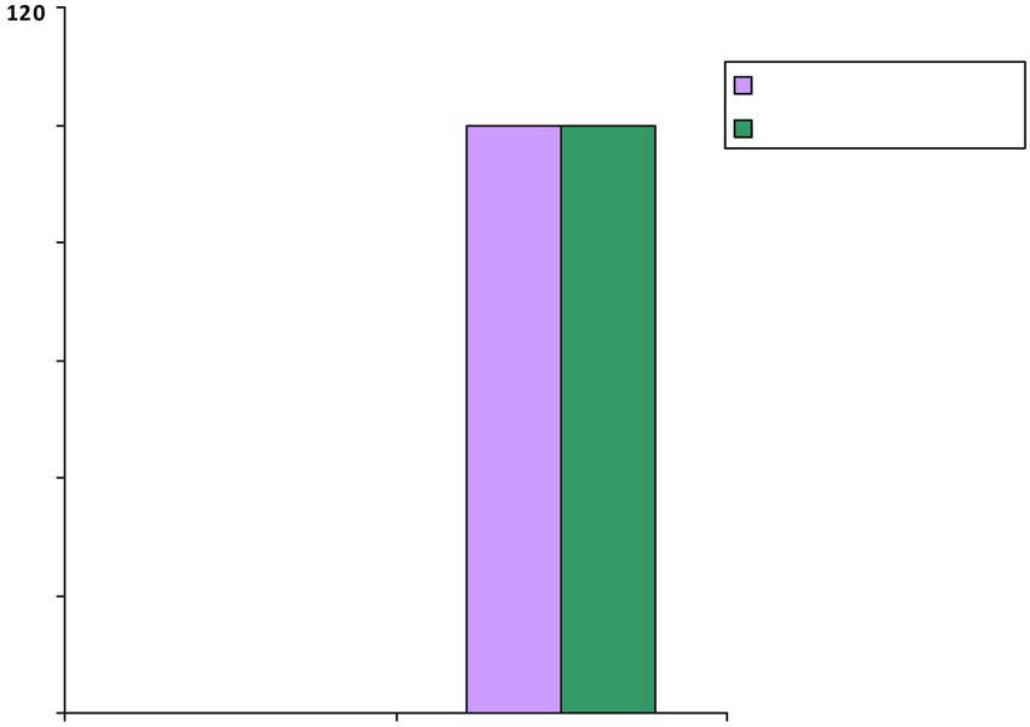
Occupation

Figure 6 : **Distribution of Sample According to Occupation**



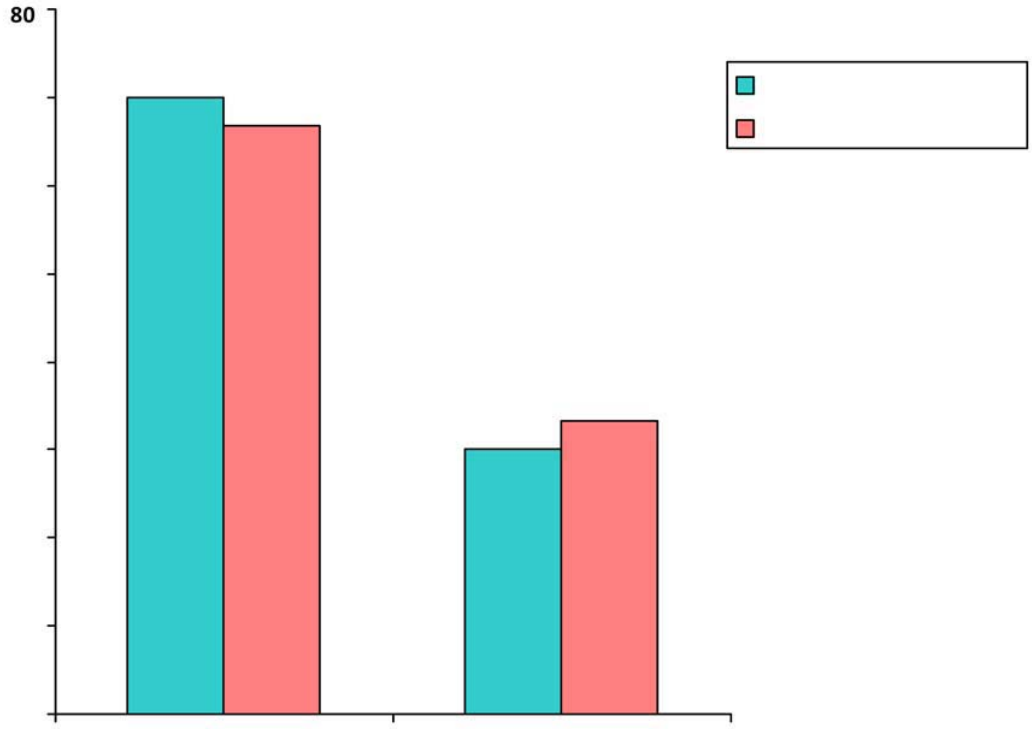
Income

Figure 7 : **Distribution of Sample According to Income**



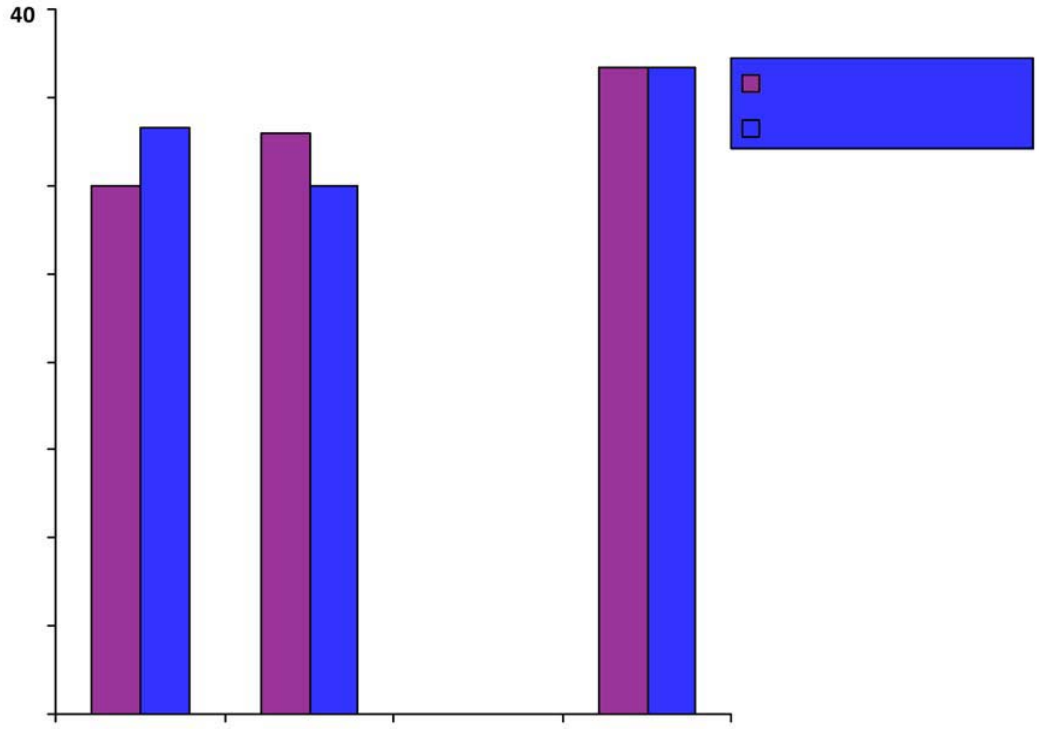
Marital Status

Figure 8 : **Distribution of Sample According to Marital Status**



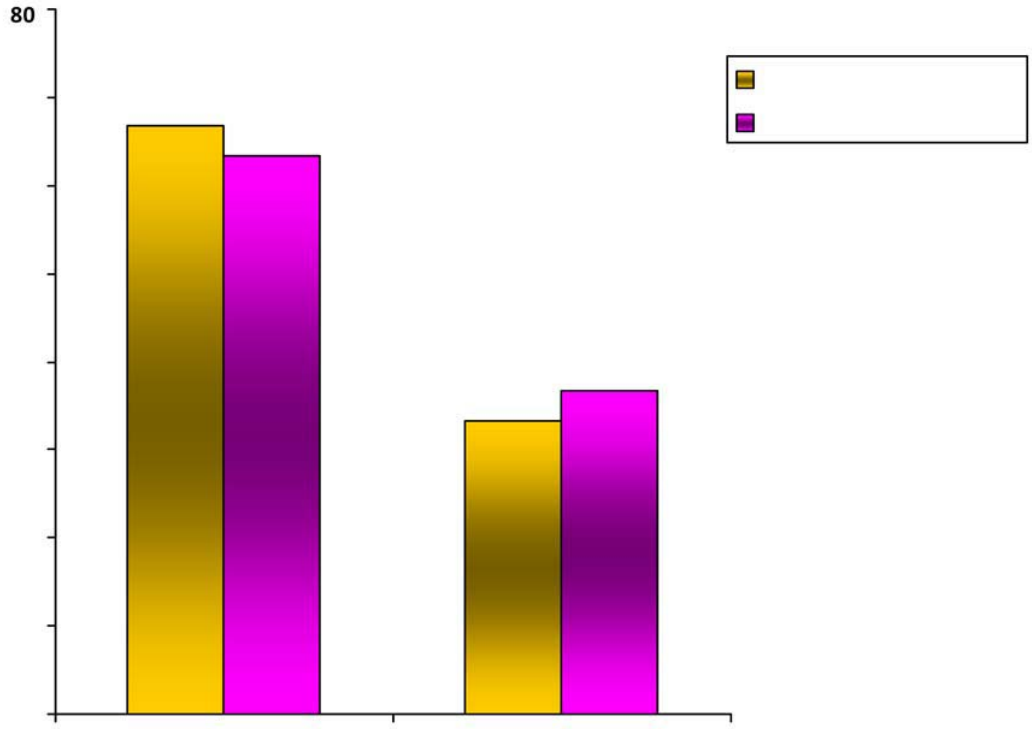
Type of Family

Figure 9 : **Distribution of Sample According to Type of Family**



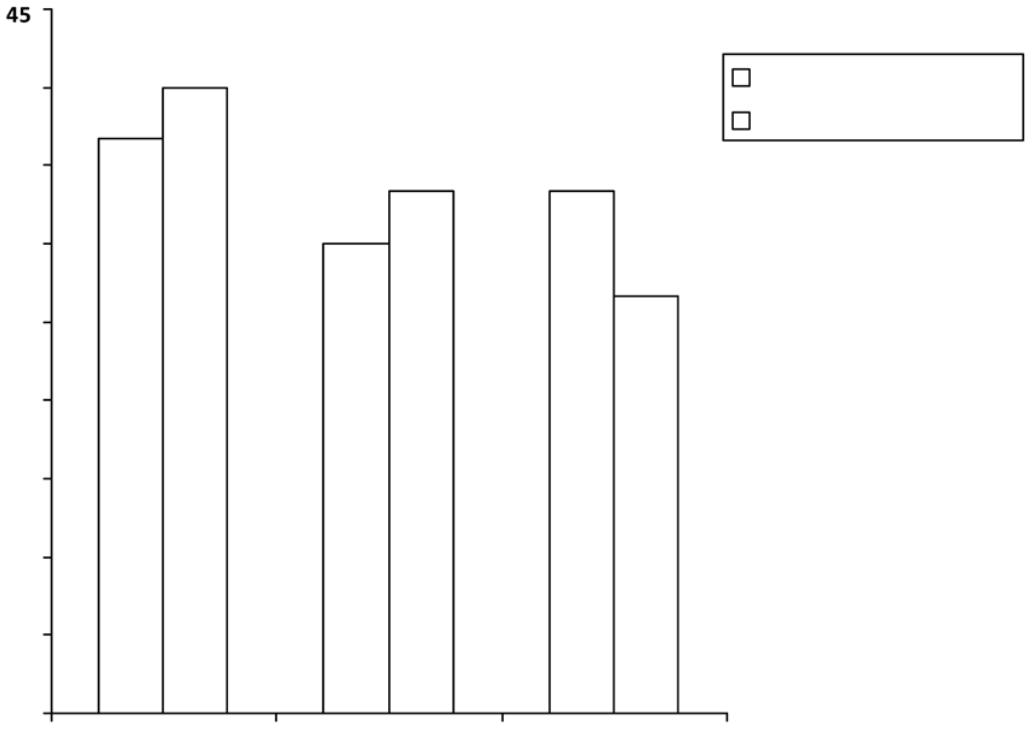
Type of House

Figure 10 : **Distribution of Sample According to Type of House**



History of Smoking

Figure 11 : **Distribution of Sample According to History of Smoking**



Family History

Figure 12 : **Distribution of Sample According to Family History**

Section B :

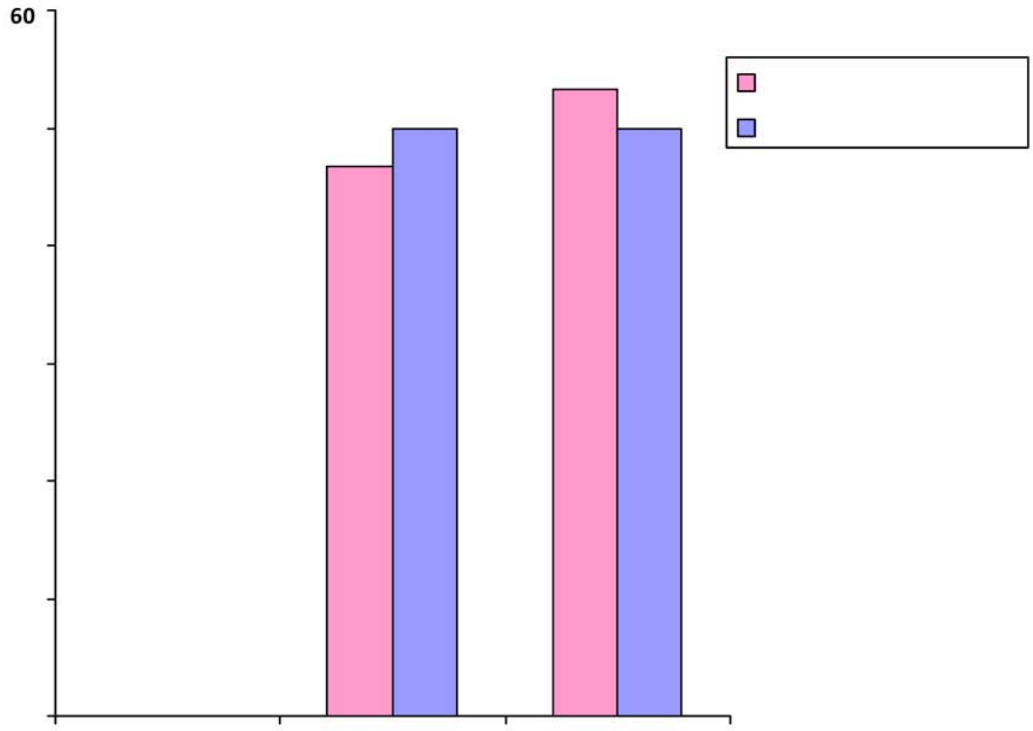
This section deals with the Assessment of Pre test and Post test level measurements on Pulmonary functional parameters in both groups.

Table 2

Assess the pretest and post test level of measurements by using COPD questionnaire in both experimental and control groups.

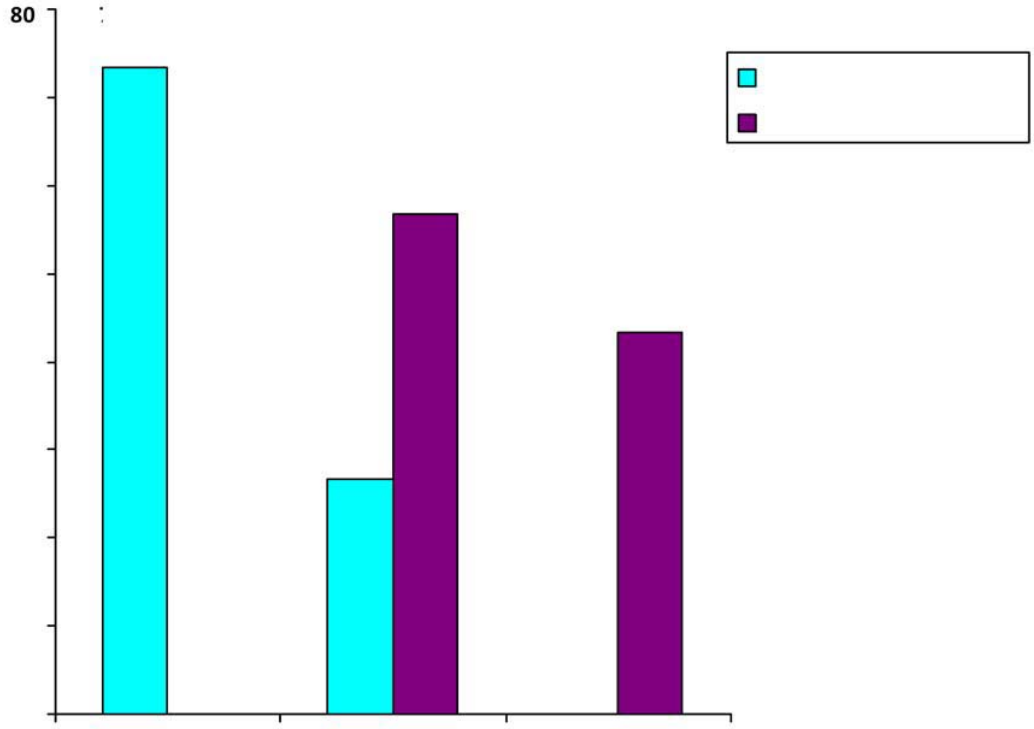
Description	Experimental Group				Control Group			
	Pre Test		Post Test		Pre Test		Post Test	
COPD	f	%	f	%	f	%	f	%
Mild	0	0.00	22	73.33	0	0.00	0	0.00
Moderate	14	46.67	8	26.67	15	50.00	17	56.67
Severe	16	53.33	0	0.00	15	50.00	13	43.33

The above table 2 shows the pretest and post test level of measurements by using COPD questionnaire in both experimental and control Groups. In the experimental group 53.33% experimental server and 46.67% experienced moderate in pretest. In the control group in pre test, 50% experienced severe, and 50% experienced moderate. Where as in post test 26.67% experienced moderate and 73.33% experienced mild in the experimental group and in the control group,43.33% experienced severe and 56.67% experienced moderate.



Pre Test Level

Figure 13 : **Pre test Level of Measurement by using COPD questionnaire in both groups.**



Post Test Level

Figure 14 : **Post Test level of Measurements by using COPD questionnaire in both groups.**

Table 3

Assess the pretest and post test level of measurements by using modified dyspnoea borg scale in both experimental and control group.

Description	Experimental Group				Control Group			
	Pre Test		Post Test		Pre Test		Post Test	
MDBS	f	%	f	%	f	%	f	%
Mild	0	0.00	17	56.67	0	0.00	0	0.00
Moderate	10	33.33	13	43.33	12	40.00	18	60.00
Severe	20	66.67	0	0.00	18	60.00	12	40.00

The above table 3 shows that pre test and post test level of measurements by using modified dyspnoea borg scale in both experimental and control groups. In the experimental group 66.67% experienced severe and 33.33% experienced moderate in pre test. In the control group in pre test 60% experienced severe and 40% experienced moderate. Whereas in post test 43.33% experienced moderate and 56.67% experienced mild in the experimental group, and in the control group 40% experienced severe and 60% experienced moderate.

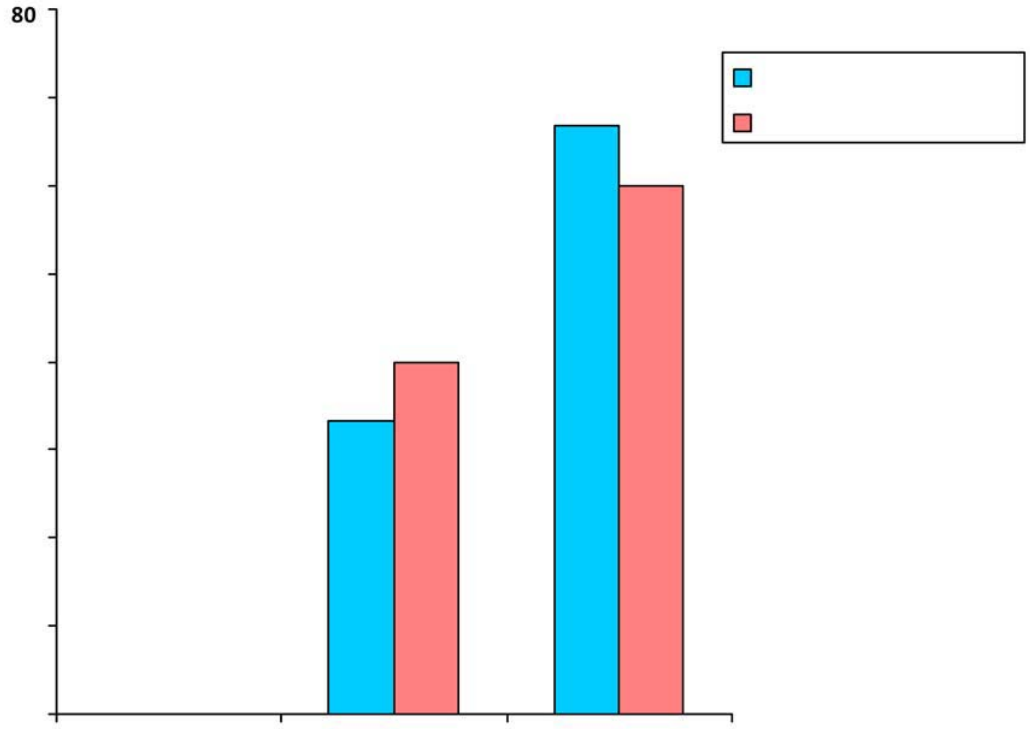
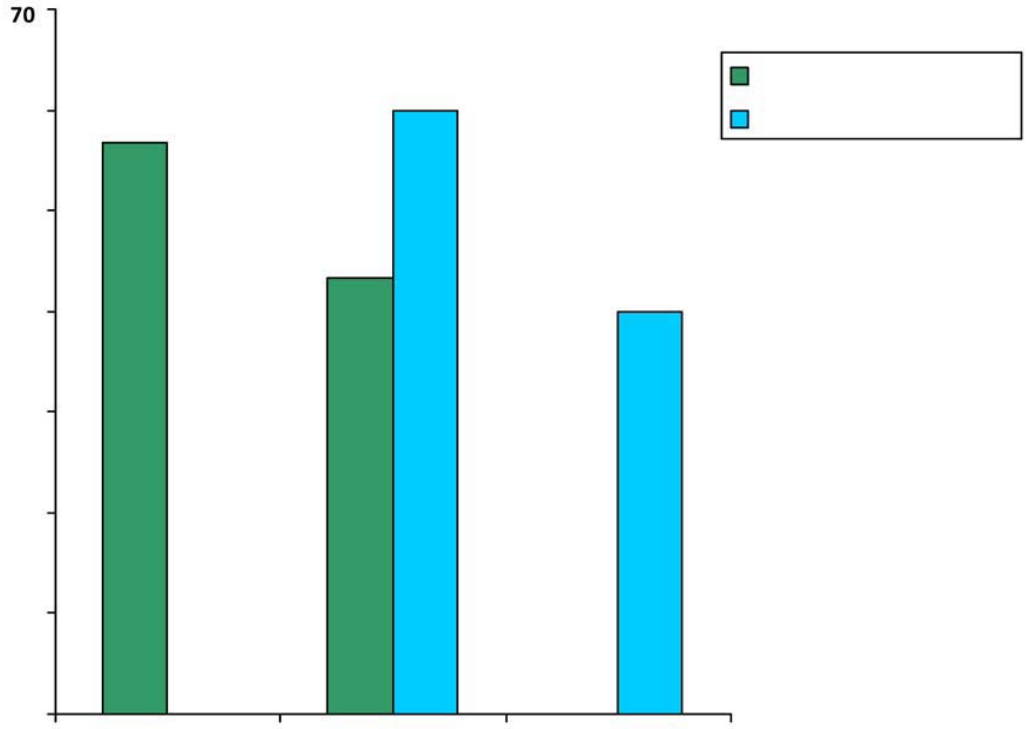


Figure 15 : **Pre test level of Measurements by using modified Dyspnoea borg scale in both groups**



Post Test Level

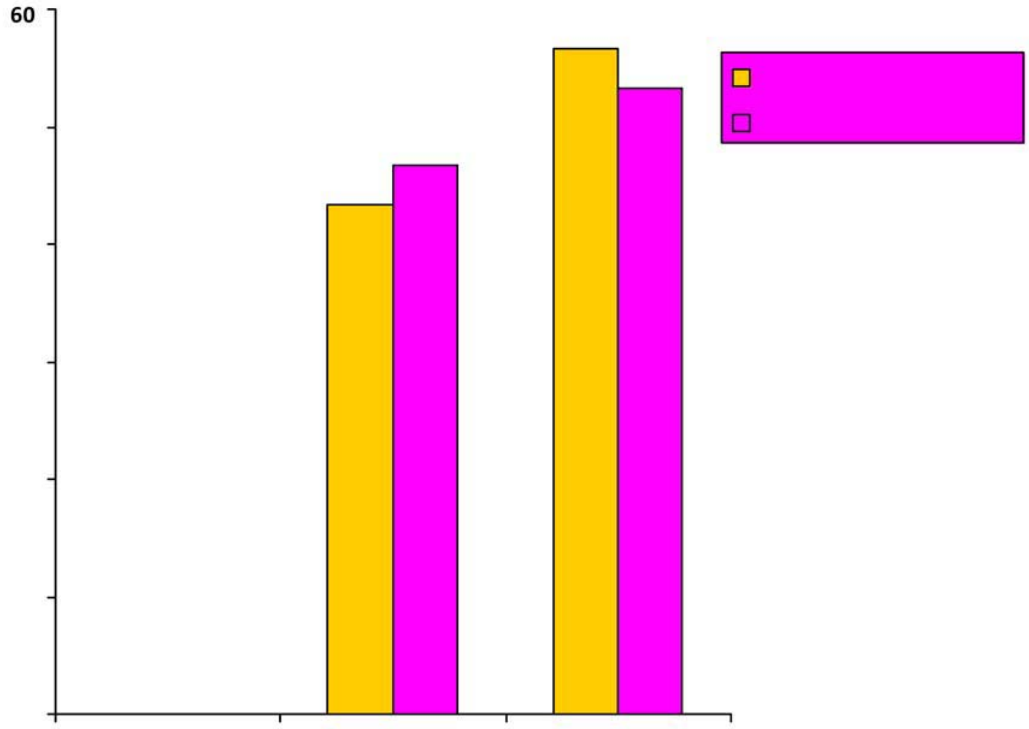
Figure 16 : **Post test Level of Measurements by using Modified Dyspnoea Borg scale in both groups.**

Table 4

Assess the pre test and post test level of measurements by using spirometer in both experimental and control groups.

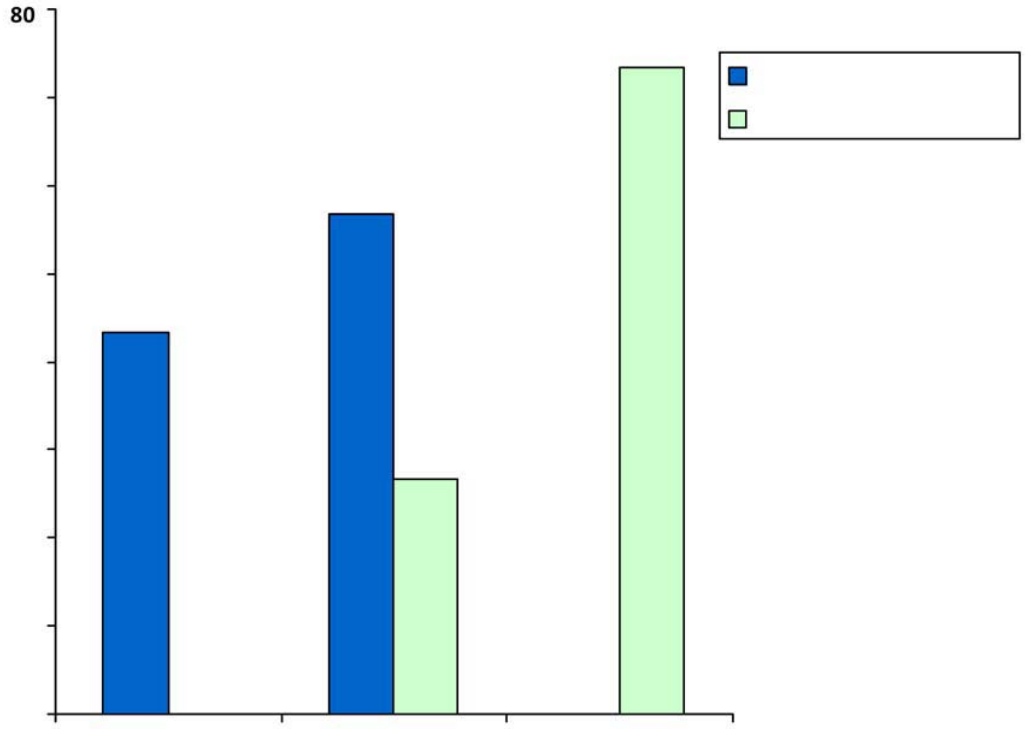
Description	Experimental Group				Control Group			
	Pre Test		Post Test		Pre Test		Post Test	
Spirometer	f	%	f	%	f	%	f	%
Mild	0	0	13	43.33	0	0.00	0	0.00
Moderate	13	43.33	17	56.67	14	46.67	8	26.67
Severe	17	56.67	0	0.00	16	53.33	22	73.33

The above table 4 shows the pretest and post test level of measurements by using spirometer in both experimental and control groups. In the experimental group 56.67% experienced severe and 43.33% experienced moderate in pretest. In the control group in pretest 53.33% experienced severe and 46.67% experienced moderate. Whereas in post test 56.67% experienced moderate and 43.33% experienced mild in the experimental group and in the control 73.33% experienced severe and 26.67% experienced moderate.



Pre Test Level

Figure 17 : **Pre test level of Measurements by using Spirometer in both groups**



Post Test Level

Figure 18 : **Post test level of measurements by using Spirometer in both groups**

Table 5

Assess the pretest and post test level of measurement by using chest expansion by inch tape in both experimental and control group.

Description	Experimental Group				Control Group			
	Pre Test		Post Test		Pre Test		Post Test	
Chest Expansion	f	%	f	%	f	%	f	%
Mild	2	6.67	18	43.33	30	10.00	0	0.00
Moderate	10	33.33	12	40.00	9	30.00	18	60.00
Severe	18	60.00	0	0.00	18	60.00	12	40.00

The above table 5 shows the pretest and post test level of measurement by using chest expansion by inch tape in both experimental and control groups. In the experimental group 60% experienced severe, 33.33% experienced moderate and 6.67% experienced mild in pretest. In the control group in pre test 60% experienced severe, 30% experienced moderate and 10% experienced mild. Whereas in post test 40% experienced moderate and 43.33% experienced mild in the experimental group and in the control group 40% experienced severe and 60% experienced moderate.

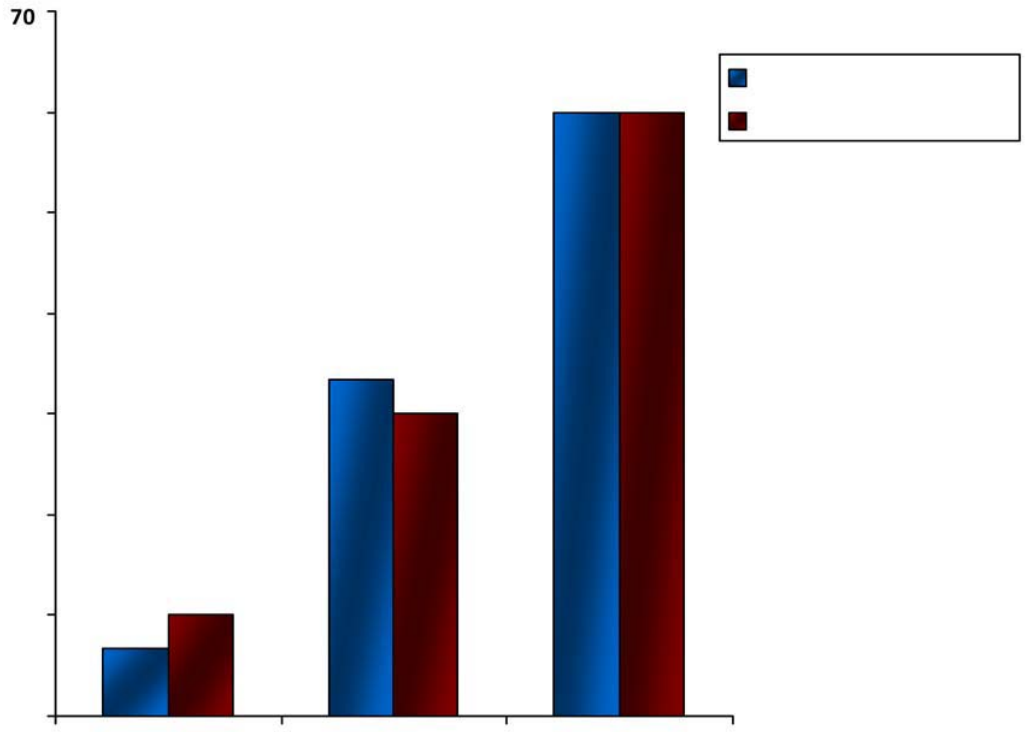
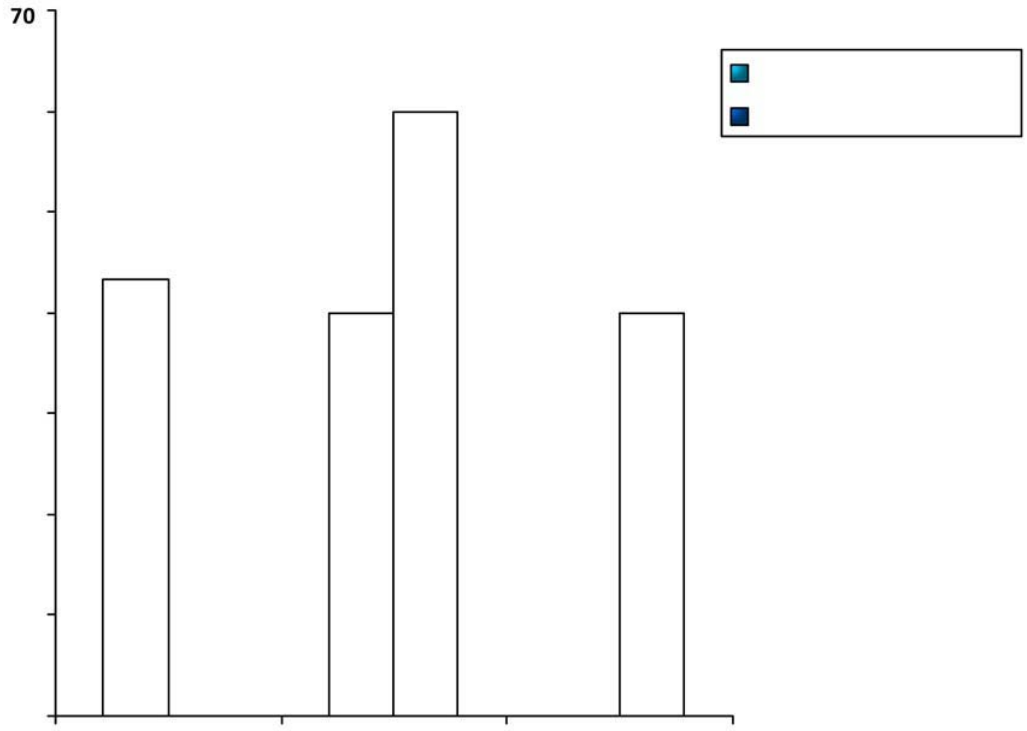


Figure 19 : **Pre test level of Measurements by using Chest Expansion by inch tape in both groups.**



Post Test Level

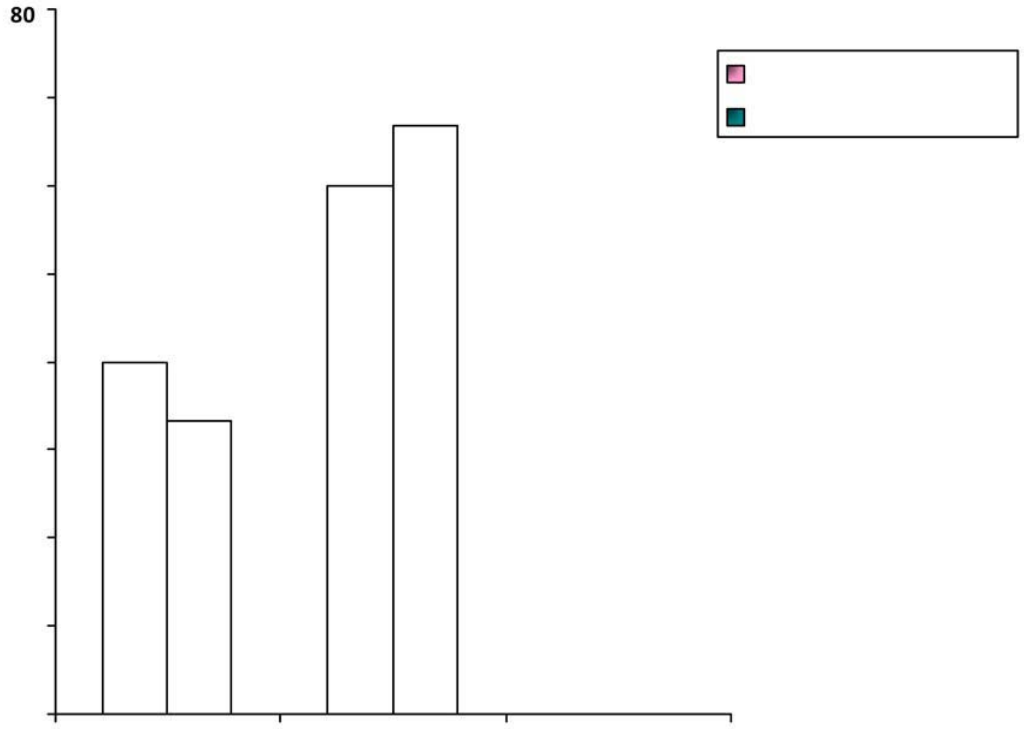
Figure 20 : **Post test level of Measurements by using Chest Expansion by inch tape in both groups**

Table 6

Assess the pretest and post test level of measurements by using breath holding time by stop clock in both experimental and control group.

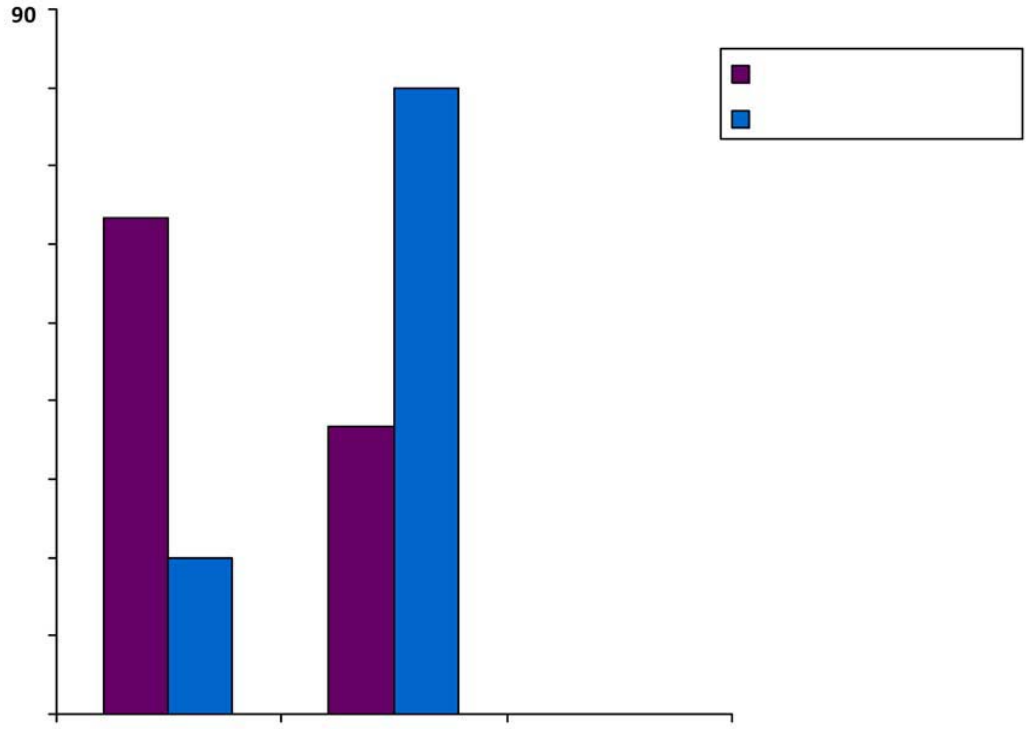
Description	Experimental Group				Control Group			
	Pre Test		Post Test		Pre Test		Post Test	
Breath Holding time	f	%	f	%	f	%	f	%
Mild	12	40.00	19	63.33	10	33.33	6	20.00
Moderate	18	60.00	11	36.67	20	66.67	24	80.00
Severe	0	0.00	0	0.00	0	0.00	0	0.00

The above table 6 shows the pretest and post test level of measurements by using breath holding time by stop lock in both experimental and control groups. In the experimental group 60% experienced moderate and 40% experienced mild in pre test. In the control group in pre test 66.67% experienced moderate and 33.33% experienced mild. Whereas in post test 36.67% experienced moderate and 63.33% experienced mild in the experimental group and in the control group 80% experienced moderate and 20% experienced mild.



Pre Test Level

Figure 21 : **Pre test level of Measurements by using breath holding time by stop clock in the groups.**



Post Test Level

Figure 22 : **Post test level of Measurements by using breath holding time by stop clock in the groups.**

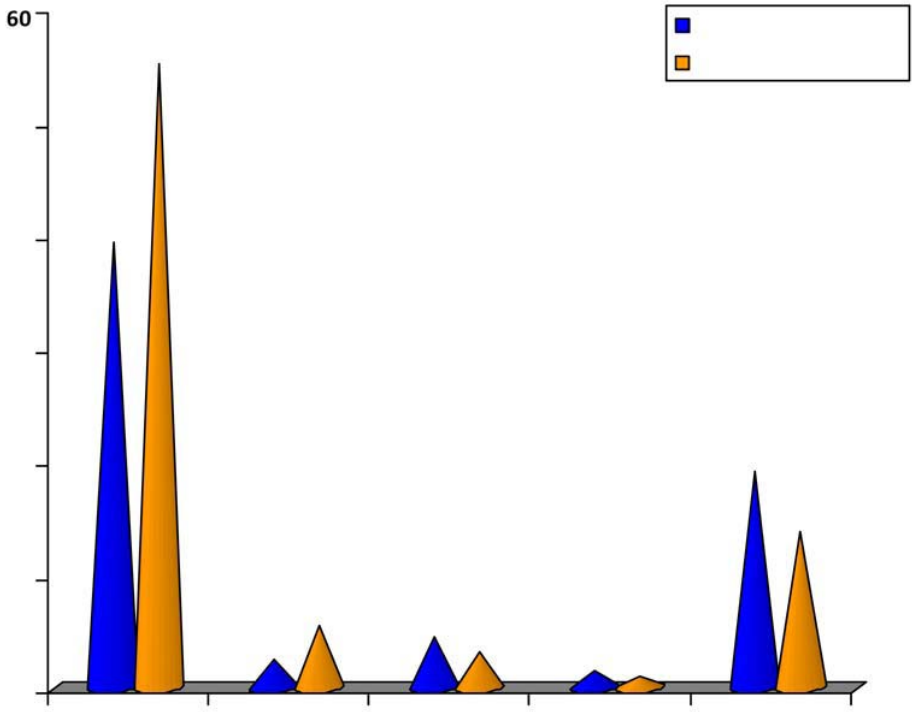
Table 7

Effectiveness of interventional package on PFP among the patients by using the post test score on both groups N=60

Type of Tool	Experimental Group	Control Group	Mean Difference	't' test	df	Table value
COPD	39.26 ± 5.19	55.05 ± 6.10	15.79	10.67	59 df	2.046
MBS	2.40 ± .62	5.40 ± 1.0	3.0	3.55	59 df	
Spirometer	4.40 ± 1.31	3.16 ± .98	1.24	4.13	59 df	
Chest Expansion	1.46 ± 0.36	.90 ± .28	.56	6.66	59 df	
Breath holding time	19.10 ± 3.16	13.72 ± 2.62	5.38	7.06	59 df	

Significant at P<0.05

The above table 7 shows the effectiveness of interventional package on pulmonary functional parameters among the patients by using the post test score in experimental group and control group. The pos test mean of COPD in experimental group was 39.26 and control group was 55.05. The post test mean of modified dyspnoea borg scale in experimental group was 2.40 and control group was 5.40 the post test mean of spirometer in experimental group was 4.40 and control group was 3.16. The post test mean of chest expansion in experimental group was 1.46 and control group was 0.90. The post test mean of breath holding time in experimental group was 19.10 and control group was 13.72.



Post Test Mean

Figure 23 : **Effectiveness of Interventional Package on Pulmonary functional parameters among the patients by using the post test mean on both groups.**

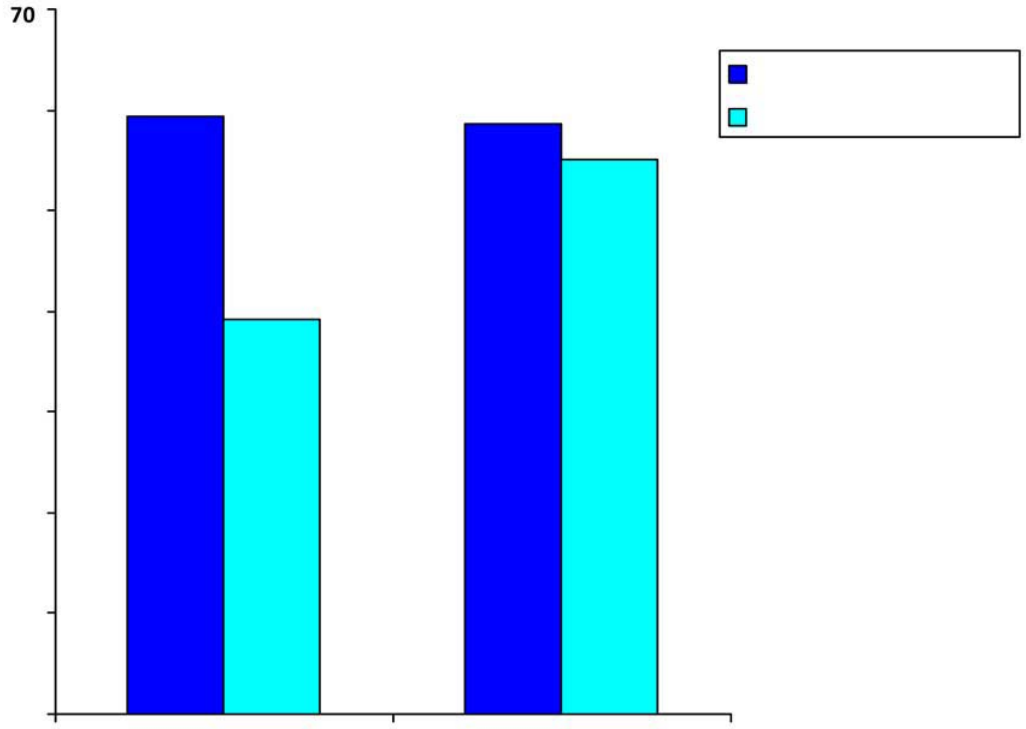
Table 8

Comparison of mean in experimental group on COPD with control group N=60.

Groups	Pre test		Pos test		Mean difference	't' test	df	t value
	Mean	SD	Mean	SD				
Experimental Group	59.40	4.83	39.26	5.19	20.14	28.45	29	2
Control Group	58.53	4.89	55.05	6.10	3.48	6.07	29	2

Significant at P<0.05

The table 8 shows the comparison of mean in experimental group on COPD with control group. In the experimental group the mean pre test COPD score was 59.40 with standard deviation 4.83 and the post test score was 39.26 with SD 5.19. The mean difference was high and statistically significant. In the control group the mean pretest COPD score was 58.53 with SD 4.89 and in the post test score was 55.05 with SD 6.10. There is a mean difference and shows highly significant. So the research hypothesis (H1) being accepted. The above findings are presented as figure.



COPD

Figure 24 : **Comparison of mean in Experimental Group on COPD with control group.**

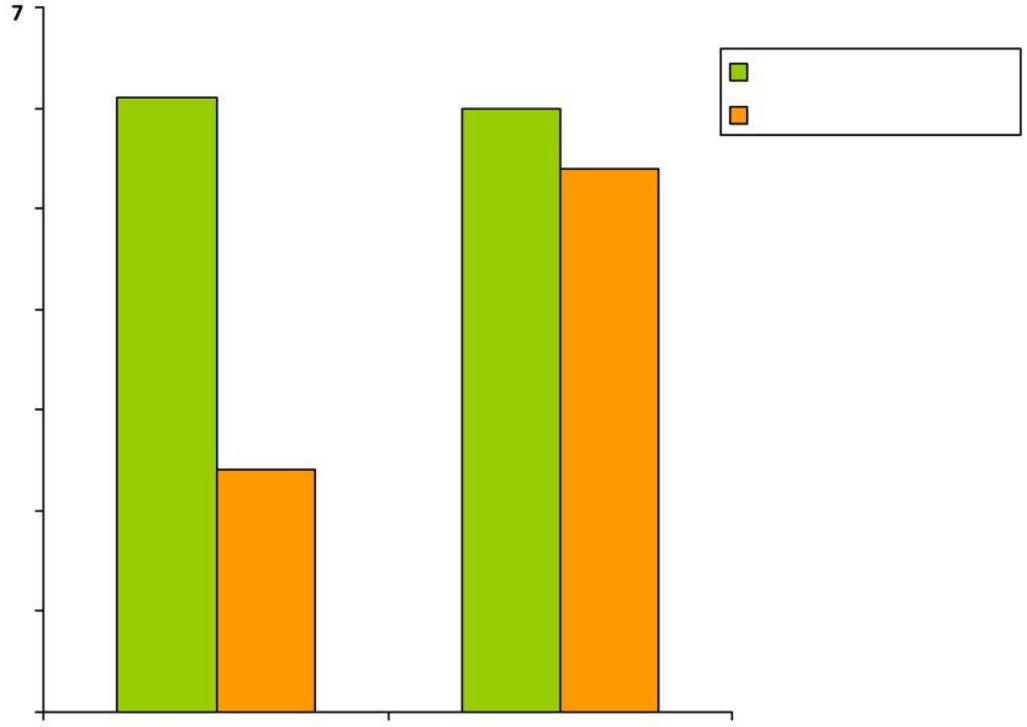
Table 9

Comparison of mean in experimental group on MDBS with control group N=60.

Groups	Pre test		Post test		Mean difference	't' test	df	t value
	Mean	SD	Mean	SD				
Experimental Group	6.10	.75	2.40	.62	3.70	43.49	29	2
Control Group	6.00	.64	5.40	1	.60	3.27	29	2

Significant at P<0.05

The table 9 shows the comparison of mean in experimental group on modified dyspnoea borg scale with control group. In the experimental group the mean pre test MDBS was 6.10 with SD. 75 and the post test score was 2.40 with 0.62 SD. The mean difference was high and statistically significant. In the control group the mean pre test MDBS was 6 with SD 0.64 and in the post test score was 5.40 with SD1. The mean difference was high and statistically significant.



MDBS

Figure 25 : **Comparison of mean in Experimental Group on MDBS with control group.**

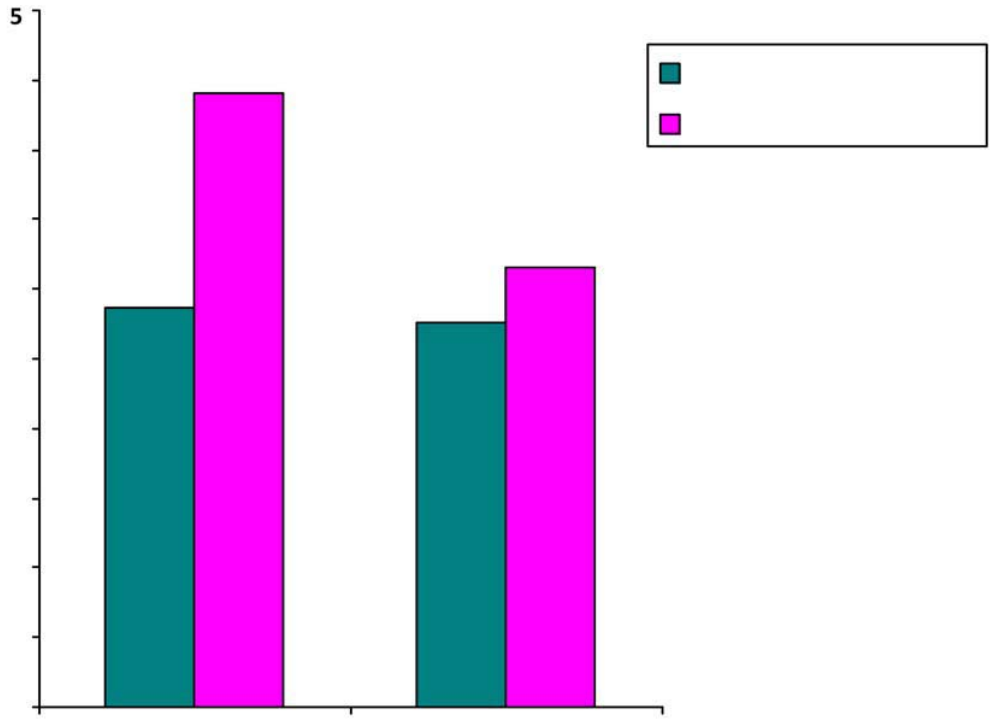
Table 10

Comparison of mean in experimental group on Spirometer with control group N=60.

Groups	Pre test		Post test		Mean difference	df	't' test	t value
	Mean	SD	Mean	SD				
Experimental Group	2.86	1.01	4.40	1.31	1.56	14.03	29	2
Control Group	2.76	.91	3.16	.98	.40	2.59	29	2

Significant at P<0.05

The table 10 shows the comparison of mean in experimental group on spirometer with control group. In the experimental group the mean pre test spirometer was 2.86 with SD 1.01 and the post test score was 4.40 with SD 1.31. In the control group the mean pre test was 2.76 with SD 0.91 and the post test score was 3.16 with SD 0.98. The mean difference was high and statistically significant.



Spirometer

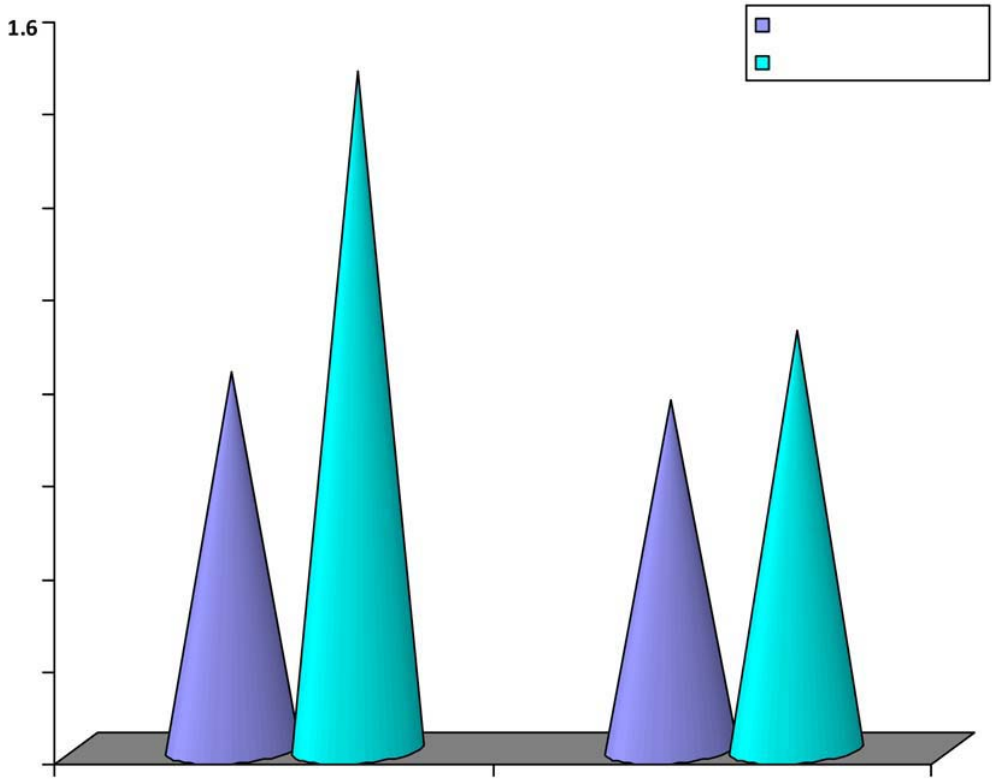
Figure 26 : **Comparison of mean in Experimental Group on Spirometer with control group.**

Table 11

Comparison of mean in experimental group on Chest Expansion with control group N=60.

Groups	Pre test		Post test		Mean difference	't' test	df	t value
	Mean	SD	Mean	SD				
Experimental Group	.811	.26	1.46	.36	.64	15.01	29	2
Control Group	.75	.25	.90	.28	.15	5.82	29	2

The table 11 shows the comparison of mean in experimental group on chest expansion with control group. In the experimental group the mean pre test score was 0.811 with SD 0.26 and the post test score was 1.46 with SD 0.36. In the control group the mean pretest was 0.75 with SD 0.25 and the post test score was 0.90 with SD 0.28. The mean difference was high and statistically significant.



Chest Expansion

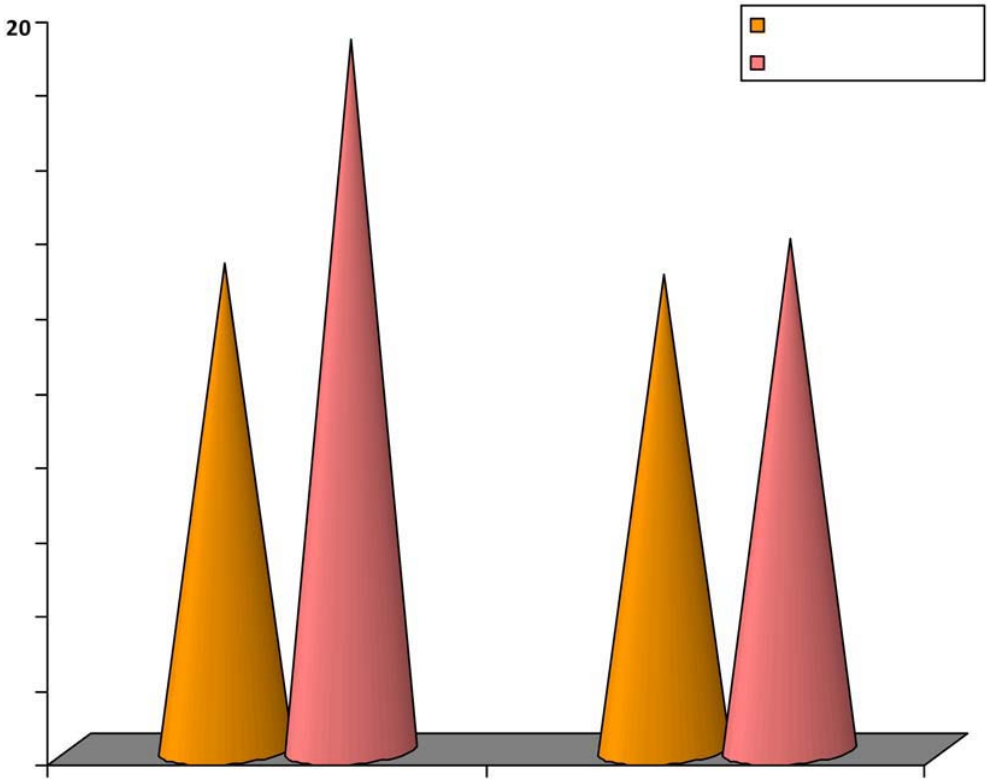
Figure 27 : **Comparison of mean in Experimental Group on Chest Expansion with control group.**

Table 12

Comparison of mean in experimental group on Breath Holding Time with control group N=60.

Groups	Pre test		Post test		Mean difference	't' test	df	t value
	Mean	SD	Mean	SD				
Experimental Group	13.10	2.07	19.10	3.16	6.0	15.17	29	2
Control Group	12.76	1.81	13.72	2.62	.96	4.86	29	2

The table 12 shows the comparison of mean in experimental group on breath holding time with control group. In the experimental group the mean pretest score was 13.10 with SD 2.07 and the post test score was 19.10 with SD 3.16. In the control group the mean pre test score was 12.76 with SD 1.81 and the post test score was 13.72 with SD 2.62. The mean difference was high and statistically significant.



Breath Holding Time

Figure 28 : **Comparison of mean in Experimental Group on Breath Holding Time with control group.**

Table 13

Association between the pulmonary functional parameters and selected demographic variables N= 60

Demographic Variables	x^2	df	Table Value
Age Group			
35 – 45 yrs			
46 – 55 yrs	9.38	3	7.82
56 – 65 yrs			
66 – 75 yrs			
Gender			
Male	1.15	1	3.84
Female			
Education			
Primary			
Middle			
SSLC	1.33	4	9.49
Higher Secondary			
Nil			
Occupation			
Sedentary	3.45	1	3.84
Non – Sedentary			

Table Thirteen Continued ……

Demographic Variables	x^2	df	Table Value

Income			
15000 8000 Below 5000	2.79	2	5.99
Marital status			
Single Married	0	1	0
Type of Family			
Nuclear Joint	0.025	2	3.84
Type of House			
Pucca Tiled Thatched Concrete	1.39	2	5.99
History of Smoking			
Yes No	4.28	1	3.84
Family History			
Allergy Lung disease Heart disease	4.96	2	5.99

The above table 13 describes the association between the pulmonary function parameters and selected demographic variables both in experimental group and control group. The result shows that there in an association between the pulmonary

functional parameters and selected demographic variables. So the research hypothesis (H2) was accepted.

CHAPTER - V

Results And Discussion

The present study was undertaken to assess the effectiveness of Interventional Package on pulmonary functional parameters among patients with COPD admitted in Sree Mookambika Medical College Hospital. Quasi experimental design was adopted with two group pre test post test design for the study. The health status measurements and level of dyspnoea was assessed by pulmonary functional parameters.

OBJECTIVES:

1. To asses the pulmonary functional parameters among patients in experimental and control group before implementing the interventional package.
2. To assess the pulmonary functional parameters among patients in experimental and control group after implementing the interventional package.
3. To determine the effectiveness of interventional package on pulmonary functional parameters.
4. To find out the association between the level of pulmonary functional parameters and the selected demographic variables of patients with COPD.

Distribution of selected characteristics of the study subjects

The demographic variables of experimental and control group was matched with their age, gender, education, occupation, income, marital status, type of family, type of house, history of smoking and family history.

The above table 1 describes distribution in number and percentage of study subjects according to their demographic variables. Out of 60 samples 12% were in the age group of 35 - 45 years, 32% were in the age group of 46.55 years, 33% were in the age group of 56-65 years, 23% were in the age group of 66-75 years. In relation to gender, 55% were Males, 45% were females. Regarding to education, 12% were primary, 25% were middle, 28% were SSLC, 20% were Higher Secondary and 15% had no education. In relation to Occupation, 55% were sedentary workers, 45% were Non – sedentary workers. Regarding income 23% had 15000, 55% had 8000, 22% had below Rs. 5000 income. In relation to Marital Status 0% were single, 100% got married. Regarding type of family 68% were nuclear 32% were joint family. Regardign to type of house 32% had pucca house, 32% had tiled, 0% had thatched, 36% had concrete house. In relation to history of smoking 65% persons were smokers and 35% were non – smokers. Regarding family history 38% had allergies, 32% had lung disease and 30% had heart diseases.

From the above sample it is observed that the experimental and control group were matched with their age, gender, education, occupation, income, marital status, type of family, type of house, history of smoking and family history.

The above table 2,3,4,5,6 shows the assessment of the pre test and post test level of pulmonary functional parameters in both experimental and control groups.

The study findings of the 60 samples were discussed based on the objectives of the study.

The first and second objective of the study was to assess the pulmonary functional parameters among patients with COPD. This study reveals that 53.33%

experimental severe and 46.67% experimental moderate and 26.67% experienced moderate and 73.33% experienced mild.

The study findings were congruent with the study Ana sm Afonso 2011. The study findings showed that the prevalence was 3.02%.

The third objective of the study was to assess the effectiveness of interventional package on pulmonary functional parameters among patients with COPD.

The study findings were congruent with the following studies.

Scherer et al, (1998) conducted a study of COPD patients to determine the effects of two intervention strategies. They used a quasi experimental two group pre post test design. 34 patients were included in this study 26 men and eight women were recruited pulmonary rehabilitation program were provided in two phases. This phase inchildren 36 sessions of three times a week for 12 weeks duration. Results showed that there was a significant increase in the training program ($P<0.01$). They concluded that self management and rehabilitation programs improved the quality of life among patients with COPD.

This study showed a highly statistically significant between experimental and control group.

The fourth objective of the study was to find out the association between the pulmonary functional parameters and the selected demographic variables. The above table describes the association between the pulmonary functional parameters and the selected demographic variables. The table clearly shows that there is an association

between the age, history of smoking and family history. The study was congruent with the study.

Foglio K, et al (2007) conducted a study to evaluate the long term course of outcome indexes in patients with COPD, undergoing pulmonary rehabilitation programs. They used prospective, observational study design. 48 COPD patients were included in the study. Datas were collected using St. George's Questionnaire. Results showed $P<0.001$ and exercise tolerance improved. In concluded that these programs elicited significant improvement in exercise capacity, dyspnoea.

Conclusion

The study identified that the level of dyspnoea was reduced in experimental group. It was found that there was a significant improvement in the pulmonary functional parameters of experimental group after interventional package than in control group. The 't' valve of difference of mean reduction of dyspnoea, on pulmonary functional parameters tabulated was found to be $t = 10.67, 3.55, 4.13, 6.66, 7.06$, $df = 59$, $P<0.05$.

The study also shows that there was an association between the age, smoking and family history.

CHAPTER - VI

Summary, Conclusion, Nursing Implication and Recommendation

Summary of the Study

The study was undertaken to assess the effect of interventional package on pulmonary functional parameters among patients with chronic obstructive pulmonary disease admitted in Sree Mookambika Medical College Hospital, Kulasekharam.

Objectives of the Study :

1. To assess the pulmonary functional parameters among patients in experimental and control group before implementing the interventional package.
2. To assess the pulmonary functional parameters among patients in experimental and control group after implementing the interventional package.
3. To determine the effectiveness of interventional package on pulmonary functional parameters.
4. To find out the association between the pulmonary functional parameters and the selected demographic variables of patients with COPD.

Hypothesis

H_1. There will be a significant improvement in the pulmonary functional parameters among patients in the experimental group after receiving interventional package than in the control group.

H_2. There will be a significant association between the pulmonary functional parameters and selected demographic variables among patients with COPD

The researcher adopted a quantitative approach with two group pre test and post test design. The study was done on 60 COPD patients admitted in Sree Mookambika Medical College Hospital, In this study, the independent variable is the interventional package and dependent variable is the pulmonary functional parameters. The subjects were selected by purposive sampling technique and they were collected from two groups of patients, 30 were allotted in experimental group and 30 in control group.

The tool used for the study was COPD Questionnaire, modified Dyspnoea Borg scale, Inspiratory and Expiratory capacity by spriometer, chest Expansion by inch tape and Breath holding time by stop clock. Pre test was conducted in experimental and control group on the first day by using the tool. Educational phase was provided for 15-20 minutes daily and deep breathing exercises were administered 2 cycles per day for 7 days. Post test was conducted to the experimental and control group on day 7. The collected data were analyzed based on descriptive and inferential statistics according to the above mentioned objectives.

The study identified that there is a reduction in the level of dyspnoea in both experimental group and control group. It was found that there was a significant high reduction in the level of dyspnoea in experimental group after intervention than in the control group. The ‘t’ value of difference of mean reduction of dyspneoa on pulmonary functional parameters tabulated was found to be t=10.67, 3.55, 4.13, 6.66, 7.06, df=59, $P<0.05$.

Study findings

The pretest of experimental and control group revealed that there was no significant difference. Both experimental and control group were similar in respect of demographic variables and thus it was observed that they were identical.

The study identified that the level of dyspnoea was reduced in experimental group. It was found that there was a significant improvement in the pulmonary functional parameters of experimental group after interventional package than in control group. The 't' valve of difference of mean reduction of dyspnoea, on pulmonary functional parameters tabulated was found to be t =10.67, 3.55, 4.13, 6.66, 7.06, df =59, $P<0.05$.

The study also shows that there was an association between the age, smoking and family history.

Conclusion :

The conclusion drawn from the findings of the study are as follows :

1. Interventional package are found to be an effective nursing intervention in reducing dyspnoea and improving the pulmonary function among COPD patients.

2. Interventional package are found to have no side effects when compared with other pharmacological therapies.

3. Patient's satisfaction is very much higher in this intervention.

4. The findings of the study enlighter the fact that interventional package can be used as a cost effective nursing intervention in reducing the dyspnoea.

5. The results showed that there is an association.

Nursing Implications

Breathlessness is one of the most distressing symptom in COPD patients. We cannot cure COPD, but can give symptomatic relief. The drugs which is given to relieve symptoms of COPD has many side effects. Now with today's growing emphasis in treatment and cost effectiveness, education and exercises are receiving more widespread intervention which in cheap effective and has no side effects. Interventional package improve the well – being and quality of life of the patients and reduce breathlessness. The present study proves the effectiveness of interventional package on pulmonary functional parameters among COPD patients, therefore the findings of the study have considerable implications on nursing administration, nursing practice and nursing research.

Implication to Nursing Administration

1. This study helps the nurse administrator to assess the knowledge of nurses regarding non – pharmacological measures in reducing dyspnoea among COPD patients.

2. The result of the study encourages the nurse administrator to conduct in service education program on various types of exercises in reducing dyspnoea among COPD patients.

3. Nurse administrator can prepare a protocol regarding each exercise sessions to develop and provide an effective non pharmacological measure for reducing dyspnoea among COPD patients.

4. This helps the Nurse administrator to develop and provide an effective non pharmacological measure for improving lung function among COPD patients.

5. Nurse administrators can create awareness among nurses that education and deep breathing exercises are very good cost effective nursing intervention to improving lung function.

6. This study is cheap, raises the reputation and population of the hospital and patients satisfaction.

Implication to Nursing Education

1. Nurse educator can train and encourage the student nurses to implement education and exercises as a non pharmacological measure to improving breathing pattern among COPD patients.

2. This study can motivate student nurses to explore new strategies for effective relief of breathlessness.

3. Module of education and breathing exercises protocol may be integrated in the medical surgical nursing program.

4. This research report can be kept in library for reference of nursing personal, students and other health care professionals.

5. The nurse educator can take independent decision based on principles of health care.

Implications to nursing practice

1. Intervention package containing education and deep breathing exercises are a safe and better modality which brings a higher level of satisfaction for patients.

2. It is one of the cost effective nursing intervention to reduce dyspnoea.

3. This intervention could bring benefits to both patients who are on pharmacological therapy and not on the same.

4. It also brings higher level of reduction of breathlessness, thus patients enjoys greater comfort during and following this intervention.

Implication to Nursing Research

The research implication of the study lies in the scope for expanding the quality of nursing service. In this era of evidence based practice, publication of these studies will take nursing to a new horizon.

1. Nurse researcher can do studies related to interventional package on COPD patients to improving lung function.

2. Nurse researcher can do studies related to other beneficial effects of exercises.

3. Similar study can be conducted on a large sample so it could be generalized.

4. A comparative study can be done to determine the effectiveness of interventional package with other alternative therapies.

Limitation

1. The sample size of the patients for the experimental and control group was only 30 and hence generalization was not possible.

2. The data collection period was only 1 month.

3. The study was delimited to patients diagnosed as COPD and within the age group of 35-75 years.

4. The study is limited only to the patients admitted in Sree Mookambika Medical college Hospital during the period of data collection.

Recommendation

1. The study may be replicated with randomization in selection of a large sample.

2. Nurse researcher can do studies related to other types of non pharmacological therapies in reducing dyspnoea.

3. A study can be conducted by including more number of variables and at different geographic locations.

4. The study can be conducted to determine the other therapeutic benefits of exercises among COPD patients.

Bibliography

Books

1. Basavanthappa, B. T. (2006). *Nursing Research.* 2nd edition. New Delhi: Jaypee Brothers Medical Publishers. Page No: 72 – 78.

2. Black MJ. Hawks jh. Keen AM. *Medical Surgical Nursing clinical management for positive outcomes* 9th edition: WB Saunders Company, Philadelphia.

3. Brunner and Suddarth (2009). *Text Book of Medical and Surgical Nursing.* Vol- 7th edition: Published by Wolters Kluwer Pvt.Ltd. Page no. 1235
4. Brunner and suddarth's. *Text book of medical surgical nursing,* 11th edition, Lippincott publishers. Philadelphia
5. Lewis. S.M;et .al: (2007) *Medical Surgical Nursing,* Philadelphia, Mosby company.
6. Mahajan B. K. (2010). *Methods in Biostatistics.* 7th edition. Philadelphia: Jaypee Brothers Medical Publishers. Ramakrishnan P. (2005). Biostatistics. 1st edition. Nagercoil: Saras Publications. Page No102 - 107.
7. Phipps Cassmeyer (1993). *Text Book of Medical and Surgical Nursing.* 3rd edition. Mosbey Publication. Page no-675.
8. Polit D. F and Hungler, B. P. (1999). *Nursing Research Principles and methods.* 6th edition. Philadelphia: Lippincott. Page No: 48– 52.
9. Ray.A. Hargrove Huttel. *Text Book of Medical and Surgical Nursing.* 2ndedition LippincotPublication. Page no.978.
10. Sharma K. Suresh. (2002). *Nursing Research and Statistics.* 2nd edition. New Delhi: Saunders Elsevier's Publications. Page No: 86 – 92

11. Watson's (1999). *Medical and Surgical Nursing and Related Physiology.* 4th edition. W.B. Saunders Company Publication. Page no 246-254.

Journals

1. Michael Stellefson, Bethany Tennant (2012). A Critical Review of Effects of COPD self – Management Education on self – efficacy ISRN Public Health 10 pages.

2. Chris D. Bailey, Richard Wagland et al (2010). An Integrative review of Systematic reviews related to the management of breathlessness in respiratory illness. BMC Pulm. Med 10:63.

3. International Journal of COPD, volume 2015, Issue default 1178 – 2005.

4. COPD Exacerbations : AJN The American Journal of Nursing 188 – 207

5. The European Respiratory Journal Nov 2011, 1222 – 1232.

6. COPD articles : The New England Journal of Medicine 613 – 673.

7. Global Initiative for chronic obstructive Lung Disease. Pocket Guide to COPD Diagnosis, Management and prevention 2010.

Electronic version

www.hindawi.com/jounrals/isrn/2012

www.sciencedaily.com/releases/2014

www.jthoracdis.com/article/view/2182/html

www.lungindia.com

www.biomedcentral.com/1471-2296

www.ncbi.nlm.nih.gov/pubmedhealth

journal.publications.chestnet.org/mobile/article

www.drugs.com/cg/chronicobstrucitvepulmonarydisease-aftercare instrction.html

www.copd.international.com/library/statistics.html

www.lungorg/lunghealthanddiseases

www.alphat.org-alpha1nationalassociaton

www.thoracic.org-americanthracicsociety

APPENDICES A

SREE MOOKAMBIKA COLLEGE OF NURSING

(Approved by the Government of Tamil Nadu & Recognised by Indian Nursing Council, New Delhi, Tamil Nadu state Nurses & Midwives Council, Chennai.)
Affiliated to The Tamil Nadu Dr. M.G.R. Medical University, Chennai.

PADANILAM WELFARE TRUST, V.P.M.HOSPITAL COMPLEX, PADANILAM, KULASEKHARAM, K.K.DIST., TAMIL NADU, PIN : 629 161.
Phone : 04651 - 280743, 280866, 280742, 280745

ETHICAL COMMITTEE CLEARANCE

Date : ....23-12-2014.....

To

Lr. No.

Mrs. Adlin Prabha. P.R.

I YR .M.Sc (N),

Sree Mookambika College of Nursing,

Kulasekharam.

Ref: Research Topic: A Study to assess the effectiveness of interventional package on pulmonary functional parameters among patients with chronic obstructive pulmonary disease admitted in Sree Mookambika Medical College Hospital, Kulasekharam.

Sub: Approval of the above reference study .

Dear Adlin Prabha P.R.

Ethics committee of Sree Mookambika College of Nursing, Kulasekharam reviewed and discussed the study proposal documents submitted by you related to the conduct of the above referenced study in the meeting held on 23-12-2014.

The following ethical committee Members were present at the meeting held on 23-12-2014.

NAME	PROFESSION	POSITION IN THE COMMITTEE
Prof. Mrs. Santhi Letha	Nursing	Chair Person
Dr. Kani Raj Peter	Medical	Basic Medical Scientist
Dr. T.C. Suguna	Nursing	Clinician
Adv. Mohanan	Legal	Legal Expert
Prof. Mrs.Ajitha Retnam	Nursing	Member secretary
Dr.P. Selva Raj	Management	Philosopher
Mr. Natarajan	Social	Medical Social Worker
Mrs. Latha	Lay Person	Community Person

After due ethical and scientific consideration, the ethics committee has approved the above presentation submitted by you.

Regards,

PRINCIPAL
Sree Mookambika College of Nursing
Kulasekharam-629 161

Mrs. Santhi Letha PhD (N)
Ethics Committee Chairperson,
Sree Mookambika College of Nursing,
V.P.M. Complex, Padanilam, Kulasekharam.

Date : 23-12-2014
Place :Kulasekharam

APPENDICES : B

LETTER SEEKING EXPERT OPINION FOR TOOL VALIDITY

Date:

To

Madam/ sir

Sub : M.Sc Nursing Programme - dissertation - Validation of study tool request - reg:

Ms/ Mrs. ADLIN PRABHA. P.R, a bonafide if II Year M.Sc Nursing student of Sree Mookambika College of Nursing is approaching you to obtain validation of study tool pertaining to her dissertation in practical fulfillment of the requirement for the degree of Master of Science in Nursing. **"A study to assess the effectiveness of interventional package on pulmonary functional parameters among patients with chronic obstructive pulmonary disease admitted in Sree Mookambika Medical College Hospital, Kulasekharam".** In this regard I request you to kindly extent possible technical guidance and support for successful completion of dissertation.

I enclosed here with a check list for your evaluation

Thanking You

Yours Sincerly

PRINCIPAL

PRINCIPAL
Sree Mookambika College of Nursing
Kulasekharam-629 161

APPENDICES : C

LIST OF EXPERTS FOR TOOL VALIDATION

1. **Dr. Mrs. Sharmila Jansi Rani M.sc (N)., Ph.D**
   Professor,
   Christian College of Nursing,
   Neyyoor.

2. **Mrs. Daisy. J., MSc (N)**
   Principal,
   NIMS College of Nursing,
   Neyyattinkara. Trivandrum.

3. **Mrs. J. M. Jerlin Priya MSc (N)**
   Principal,
   Annammal College of Nursing. Kuzhithurai.

4. **Mrs. Rajam. U. MSc (N)**
   Associate Professor,
   CSI College of Nursing,
   Karakonam, Trivandrum.

5. **Mrs. R. Mercy Russelin Prabha. MSc (N)**
   Associate Professor,
   NIMS College of Nursing,
   Neyyattinkara. Trivandrum.

6. **Mrs. Moona.J. Cicil.MSc.(N)**
   Associate Professor,
   Christian College of Nursing, Neyyor.

7. **Dr. J. Kaniraj Peter. MD,**
   Professor and HOD, Dept.of Medicine,
   Sree Mookambika Medical College Hospital,
   Kulasekharam, K.K Dist.

APPENDICES : D

DESCRIPTION OF THE TOOL

SECTION : A

Demographic Variable

1. Age
   - (a) 35 – 45 yrs
   - (b) 46 – 55 yrs
   - (c) 56 – 65 yrs
   - (d) 66 – 75 yrs
2. Gender
   - (a) Male
   - (b) Female
3. Education
   - (a) Primary
   - (b) Middle
   - (c) S.S.L.C.
   - (d) Higher Secondary
   - (e) Nil
4. Occupation
   - (a) Sedentary
   - (b) Non – sedentary
5. Income
   - (a) Rs. 15000 (Above poverty line)
   - (b) Rs. 8000 (poverty line)
   - (c) Rs. Below 5000 (BPL)

6. Marital Status

   (a) Single

   (b) Married

7. Type of Family

   (a) Nuclear

   (b) Joint

8. Type of House

   (a) Pucca

   (b) Tiled

   (c) Thatched

   (d) Concrete

9. History of Smoking

   (a) Yes

   (b) No

   If yes

   (a) Active smoker

   (b) Passive Smoker

10. Family History

   (a) Allergy

   (b) Lung disease

   (c) Heart disease

SECTION : B

COPD Questionnaire

Sl. No	On average, during the past week, how often did you feel	Never	Hardly ever	A few times	Several times	A great Many times	Almost all the time
		0	1	2	3	4	5
1.	Short of breath at rest?						
2.	Short of breath doing physical activities?						
3.	Any chest illness (pain, irritation, heart burn) because of your breathing problems?						
4.	Chest ever tight or your breathing become difficult						
5.	Difficulty in breathing especially in the morning?						
6.	Do you feel chest illness (or) irritation after you are taking cold food items?						
7.	Did you experience cough when you exposed to cool environment?						

8.	Did you take inhaler when you feel sever discomfort?						
9.	Concerned about getting a cold or your breathing getting worse?						
10.	Depressed (down) because of your breathing problems?						
	In general, during the past week, how much of the time						
11.	Did you cough?						
12.	Did you produce phlegm?						
13.	How long have you had this phlegm?						
14.	Did you have any allergies?						
15.	Did you feel difficult breathing on over exerting your self?						

	On average, during the past week, how limited were you in these activities because of your breathing problems.	**Not limited at all**	**Very slightly limited**	**Slightly limited**	**Moderately limited**	**Very limited**	**Totally limited / or unable to do**
16.	Strenuous Physical activities (such as climbing stairs, hurrying to do anything)						
17.	Moderate Physical activities (such as walking, house work, carrying things)?						
18.	Daily activities at home (Such as dressing, washing yourself)?						

19.	Social activities (such as talking, being with children, visiting friends / relatives)?						
20.	Any recurrent respiratory infections?						

SECTION : C

MODIFIED DYSPNOEA BORG SCALE

Description :

MBS is a assessment tool for dyspnoea.

General Information :

The scale is explained to the patient. According to the scoring interpretation given below the scores are given.

Scoring Interpretation :

The scoring of the scale is :

SCALE	SEVERITY
0	No Breathlessness at all
1	Very slight
2	Slight Breathlessness
3	Moderate
4	Some what severe
5	Severe Breathlessness
6	Very severe Breath lessness
7	Very very severe (Almost maximum)
8	Maximum (even at rest)

SECTION : D

INSPIRATORY & EXPIRATORY USING SPIRO METER

Description :

Assessment of spirometer is used to help patients improve the functioning of their lungs.

Procedure :

The patient breathes in from the device as slowly and as deeply as possible, then holds his / her breath for 2-6 seconds.

Spiro Meter	Score
3 balls rises	6
2 balls rises	4
1 ball rise	2
No rising of balls	none

SECTION : E

CHEST EXPANSION BY INCH TAPE

Description :

Assessment of chest expansion with deep inspiration helps identify the side of abnormality.

Procedure :

Over all chest expansion :

Take a tape and encircle chest around the level of nipple. Take measurements at the end of deep inspiration and expiration. Normally a 2 -5” of chest expansion can be observed.

Scoring :

This will determine the chest expansion before and after the procedure and to assess the difference only among each patients with COPD.

SECTION : F

BREATH HOLDING TIME BY STOP CLOCK

Description :

Assessment of breath holding time by stop clock helps identify the person has the ability to hold their breath for a particular period of time.

Procedure :

Before holding your breath, inhale and exhale slowly from deep within your diaphragm. Average breath holding time is 30 to 40 seconds.

Scoring :

This will determine the breath holding time before and after the procedure and to assess the difference only among each patients with COPD.

COPD ®]ôdLs

Y. Gi	LPkR JÚ YôW LôXUôL GlT¥ ¿eLs CÚk¾oLs?	JÚ úTôÕm 0	Gl úTôRôYÕ 1	£X NUVm 2	TX Øû\ 3	ªLl ùT¬V TX Øû\ 4	Gl úTôÕm 5
1.	KnÜ GÓdÏm úTôÕ ÑYôNd Ïû\TôÓ LôQlTÓUô?						
2.	HRôYÕ úYûX ùNnÙm úTôÕ ÑYôNd Ïû\TôÓ LôQlTÓUô?						
3.	ÑYôNd úLô[ôßL[ôp EeLÞdÏ ùSg£p HRôYÕ (YúVô, ùSgÑ G¬fNúXô, ùRôkRWúYô) LôQlTÓUô?						
4.	EeLÞdÏ Uôo× TÏ§«p CßdLUôLúYô, ApXÕ ÑYôNm ®P LxPUôLúYô CÚdÏUô?						
5.	ùTôÕYôL LôûX úYû[«p êfÑ ®P LxPUôL CÚdÏUô?						
6.	¿eLs Ï°Wô] EQÜ YûLLs EiP ©u]o ùSgÑ G¬fNúXô, úNôoúYô LôQlTÓUô?						
7.	¿eLs Ï°o NUVeL°p ùY°úV úTôÏm úTôÕ EeLÞdÏ CÚUp YÚUô?						
8.	EeLÞdÏ ÑYôNd úLô[ôß CÚdÏm úTôÕ ¿eLs CuúLXo TVuTÓjÕYÕ EiPô?						
9.	EeLÞdÏ _XúRô`m YÚmúTôÕ ÑYôNm ØhPÛm úNokÕ YÚUô?						
10.	ÑYôNd úLô[ôû\ Ï±jÕ ¿eLs U]úNôoÜ AûPkRÕiPô?						

	LPkR JÚ YôWUôL EeLÞdÏ GjRû] Øû\						
11.	EeLÞdÏ CÚUp CÚkRRô?						
12.	EeLÞdÏ LTm YÚYÕiPô?						
13.	GjRû] LôXUôL LTm EeLÞdÏ YÚ¡\Õ?						
14.	HRôYÕ G§o®û[ÜLs EiPô?						
15.	¿eLs LxPlThÓ úYûX ùNnÙm úTôÕ EeLÞdÏ êfÑ ®P LxPUôL CÚdÏUô?						
	ÑYôNd úLô[ôßL[ôp LPkR JÚ YôWLôXUôL EeL[Õ ùNVpTôÓL°p EeLÞdÏ Ïû\Ls LôQlThPRô GuTûR Tt± :						

16.	¿eLs T¥ Hßm úTôúRô (ApXÕ) HRôYÕ L¥]Uô] úYûXLs ùNnÙm úTôúRô EeLÞdÏ ÑYôNd úLô[ôß HtTÓUô?						
17.	¿eLs (ÅhÓ úYûXLs ùNnÙm úTôúRô, SPdÏm úTôúRô, HRôYÕ ùTôÚhLû[ÑUdÏm úTôúRô EeLÞdÏ LxPUôL LôQlTÓUô?						
18.	¿eLs EûPLs UôtßmúTôúRô ÕûYdÏm úTôúRô EeLÞdÏ LxPUôL LôQlTÓUô?						
19.	¿eLs ®Úk§]¬Pm ApXÕ ©sû[L°Pm NkúRô`UôL úT£ £¬dÏm úTôÕ EeLÞdÏ LxPUôL CÚdÏUô?						
20.	EeLÞdÏ A¥dL¥ ÖûWÂWp ùRôtß úSôn YÚYÕiPô?						

APPENDICES : F

EVALUATION TOOL CHECK LIST

Name of the expert :

Designation :

College :

Respected Madam / Sir,

Kindly go through the demographic variables, COPD Questionnaire, Modified dyspnoea Borg Scale, Inspiratory and Expiratory Spirometer, Chest Expansion by Inch tape, Breath Holding Time by Stop clock, please give your valuable suggestions regarding accuracy, relevancy, and appropriateness of the content. If there is any suggestions or comments, please mention in the remarks column.

CHECK LIST FOR VALIDATING THE TOOL

S.No	ITEMS		Remarks
	Accepted	Not Accepted	
Part-1 Demographic Variables.			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			

Questionnaire No.	ITEMS		Remarks
	Accepted	Not Accepted	
1.			
2.			

3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			
17.			
18.			
19.			
20.			

APPENDICES : G

INTERVENTIONAL PACKAGE

TôPlTÏ§ : SôhThP ÖûWÂWp AûPl× úSôn

ÏÝ : SôhThP ÖûWÂWp AûPl× úSôV°Ls

úSWm : 20 ¨ªPeLs

Lt©jRp Øû\ : ®¬ÜûW

úLs® Lôh£ ETLWQeLs : TYo Tô«ih

ùTôÕ úSôdLeLs :

Lt©jRu Ø¥®p SôhThP ÖûWÂWp AûPl× úSôûV Tt± A±ûYl ùTßYo.

£\l× úSôdLeLs :

Lt©jRu Ø¥®p SôhThP ÖûWÂWp AûPl× úSôVô°Ls ùTßm §\uLs

- ÖûWÂWp EPtáß Utßm ùNVVp Tt± ®Y¬jRp
- SôhThP ÖûWÂWp AûPl× úSôn YûWVß
- SôhThP ÖûWÂWp AûPl× úSô«u ¨LrÜLs Tt± YûWVû\ ùNnRp

- SôhThP ÖûWÂWp AûPl× úSô«u LôWQeLû[Th¥VÓRp
- SôhThP ÖûWÂWp AûPl× úSô«u A±Ï±Lû[YûWVß
- ÖûWÂWp TWôU¬l× Øû\Lû[®[dÏRp
- SXdLp® Tt± ®[dÏRp

£\l× úSôdLeLs	ùTôÚ[PdLm	úSWm	Lt©jRp ùNVpTôÓLs	Lt\p ùNVpTôÓ	úLs® Lôh£ ETLWQeLs	U§lÀÓ
	ØuàûW : ÑYôN UiPXm AûPl× Gu\ úSôn Lôtß ÏZô«p AûPl× HtThÓ ÑYôN §Q\p HtTÓ¡u\Õ. CkR úSôn ØÝûUVôL ÏQlTÓjR Ø¥VôR úSôn. BLúY ÖûWÂWûX TûZV ¨ûXdÏ ùLôiÓ YÚYRôp úSôVô°L°u YôrdûL RWm EVÚm Utßm Au\ôP ùNVpTôÓL°Ûm AYoLs ØÝ DÓTôúPôÓ LôQlTÓYo.					
ÖûWÂWu EPtáß Utßm ùNVVp Tt± ®Y¬jRp	ÖûWÂWu EPtáß Utßm ùNVVp : ÖûWÂWp Uôo× áh¥u Esú[CÚRVj§u CÚTdLj§Ûm AûUkÕ CÚd¡\Õ. ÖûWÂWp ØdúLôQm Y¥®p Es[Õ. ARu ØLÓ ØRp ®Xô GÛm©u úUúXÙm A¥R[m DWÛdÏm ÏPÛdÏm CûPúV Nq®Ûm AûUkÕs[Õ. JqùYôÚ ÖûWÂWÛm úUpTÏ§ CûP«Ûs[TÏ§Vôp úUpTÏ§VôLÜm, ¸rTÏ§VôLÜm CWiÓ ©¬ÜL[ôp ©¬dLlThÓs[Õ. YXÕ ÖûWÂWp êuß TÏ§Ùm, CPÕ ÖûWÂWp CWiÓ TÏ§L[ôp		®¬ÜûW	LY²jRp	TYo Tô«ih	ÖûWÂWu Ød¡V T¦ Gu]?

	©¬dLlThÓs[Õ.					
SôhThP ÖûWÂWp AûPl× úSôn YûWVß	SôhThP ÖûWÂWp AûPl× úSôn : YûWVû\ : SôhThP ÖûWÂWp AûPl× úSôn Gu\ôp ÖûWÂWu JÝe¡uûUVôp êfÑ Esú[GÓdLÜm ùY°®PÜm Tô§l× HtTÓ¡u\Õ. ©Wôp ûLh¼v, GmûTºUô, BvÕUô CRàûPV Ød¡VUô] JÝe¡uûULs BÏm.		®¬ÜûW	LY²jRp		SôhThP ÖûWÂWp AûPl× úSôn Gu\ôp G]u?
SôhThP ÖûWÂWp AûPl× úSô«u ¨LrÜLs Tt± YûWVû\ ùNnRp	¨LrÜLs : UWQ ®¡Rj§p IkRôYÕ CPj§p CÚd¡\Õ. AùU¬dLô®p CkúSôn Øu²ûX YÏd¡\Õ. CkúSô«]ôp UWQm HtTÓ¡\Õ. C§p Bi, ùTi CÚTôXÚm Tô§lTûP¡u\]o. CûY áÓRÛm 35 YVÕdÏ úUtThPYoLû[Tô§d¡\Õ. BiLs ùTôÕYôL Tô§dLl TÓ¡u\]o.		®¬ÜûW	LY²jRp		SôhThP ÖûWÂWp AûPl× úSôn VôÚdÏ A§LUôL LôQlTÓ¡\Õ.
úSô«u LôWQeLû[Th¥ VÓRp	LôWQeLs : CkúSôn £X LôWQeL[ôp HtTÓ¡u\Õ. áÓRÛm ×ûL ©¥lT§]ôp CkúSôn HtTÓ¡u\Õ. úUÛm ùRô¯t §\kR ¨ûX		®¬ÜûW	LY²jRp		SôhThP ÖûWÂWp AûPl× úSô«u Ød¡V LôWQeLs VôûY?

	- Lôtß UôÑTÓRp - TôWmT¬V úSôn CdLôWQeL[ôp Tô§dLlTÓ¡\Õ.					
EPtùNVu ¨ûXUôt\jûR ®[dÏRp	EPtùNVu ¨ûXUôt\m : SôhThP ÖûWÂWp AûPl× úSô«]ôp êfÑ §Q\p HtTÓ¡\Õ. CR]ôp ÑYôNd ÏZô«u ¨ûX«p Uôt\m SûPùTß¡\Õ. CR]ôp ÑYôN ÏZô«p ÅdLm HtThÓ áßLs B¡\Õ. CR]ôp §ÑdLs C\d¡u\]. CR]ôp ÑYôNd ÏZô«p AûPl× HtTÓ¡\Õ. ÑYôNd ÏZôn AûPl©]ôp úNôoÜm, EPp GûP Ïû\RÛm, CVXôûUÙm B¡u\Õ. CR]ôp CÚRVm, CWjR Sô[eLs Utßm £ß¿WLeL°p áP Uôt\eLs HtTÓ¡u\Õ.		®¬ÜûW	LY²jRp		SôhThP ÖûWÂWp AûPl× úSôn GR]ôp YÚ¡\Õ?
SôhThP ÖûWÂWp AûPl× úSô«u A±Ï±Lû[YûWVß	A±Ï±Ls : • ¿X ¨\j§p LôQlTÓm EPm× • CWUp		®¬ÜûW	LY²jRp		SôhThP ÖûWÂWp AûPl× úSô«u A±Ï±Ls VôûY?

	• LTm • êfÑ §Q\p • LÝjÕ SWm©p ÅdLm • Ám× Y¥®p LôQlTÓm Uôo× • ®WpLs UPe¡«ÚjRp • ×ûL ©¥jR LûWLs • úNôoÜ					

ÖûWÂWp TWôU¬l× Øû\Lû[®[dÏRp	ÖûWÂWp TWôU¬l× Øû\Ls : ➢ ÑLôRôWUô] êfÑ ÏZôn ➢ ºWô] EPtT«t£ ➢ êfÑ UßT«t£ ➢ TôÕLôlTô] Bt\p ➢ FhPfNjÕ Utßm Lp® ➢ ÑLôRôWUô] YôrÜ ÑLôRôWUô] êfÑ ÏZôn : ÑYôNd ÏZô«p HtTÓm ®û[ÜLû[RÓdL úYiÓùUu\ôp Sôm êfÑ Lôtß Y¯Lû[ºWôL ûYjÕd ùLôs[úYiÓm. ºWô] EPtT«t£ : SPdL úYiÓm Utßm ûLLû[EVojÕYÕ, Yôn Y¯VôL êfÑ®ÓYÕ úTôu\ EPtT«t£Lû[ùNnV úYiÓm.		®¬ÜûW	LY²jRp		ÖûWÂWp TWôU¬l× Øû\Lû[®[dÏL?

	êfÑ UßT«t£ : NUUôL êfÑ®ÓRp :  ClT«t£«p 1,2,3,4 Guß GiÔm ùTôÝÕ êfûN Esú[CÝdLÜm ©u]o 1,2,3,4 Guß GiÔm ùTôÝÕ êfûN ùY°úV ®P úYiÓm. CûR GeÏ úYiÓùUu\ôÛm ùNnVXôm. TÓdûLdÏ Øu]o ùNnYÕ SpXÕ. Y«tß êfÑ ÖhT«t£ :  JÚ ûLûV Uôo× TÏ§«Ûm, JÚ ûLûV Y«tß					

	TÏ§«Ûm ûYjÕ ùLôiÓ êdÏ Y¯VôL ¿iP êfûN GÓdLÜm. CúR úTôp 6 ØRp 10 Øû\ ùNnVÜm. CkR T«t£ûV 10 ¨ªPeLs LôûX Utßm UôûX úYû[L°Ûm ùNnVXôm. CR]ôp ÖûWÂWp ®¬YûP¡\Õ. BÑYôNlTÓjÕm êfÑ T«t£ :  CkR T«t£ûV ùNnÙm úTôÕ Sôm úSWôL EhLôW úYiÓm. Sôm SUÕ Ö² SôûY úUtTtL°u CûPúV ûYjÕ ùLôs[úYiÓm. Sôm Yôn Y¯VôL êfÑ ®P úYiÓm. ➢ Yôn Y¯VôL êfûN ®P úYiÓm ➢ 1,2,3,4 Guß GiÔm úTôÕ YôûV ê¥ êdÏ Y¯VôL ÑYôNm GÓdL úYiÓm. ➢ 5,6,7 Guß GiÔm úTôÕ êfûN ©¥jÕ ùLôs[úYiÓm.					

	➢ Yôn Y¯VôL êfûN ®P úYiÓm. ➢ ClT«t£ûV 3 ØRp 4 Øû\ YûW ùNnVXôm. CÚUp T«t£Ls :  ➢ úSWôL EhLôW úYiÓm ➢ êdÏ Y¯VôL êfûN GÓjÕ ùLôiÓ Yôn Y¯VôL ®P úYiÓm. ➢ LôpLû[A¥ Y«tßdÏ úUp LhP úYiÓm. ➢ ¿iP êfûN êd¡u Y¯VôL GÓdL úYiÓm. ➢ EhLôokR ¨ûX«p Øu]ôL NônkÕ ûLLû[CßdL úYiÓm. Cßd¡ ùLôiÓ CÚØRp úYiÓm. ➢ BÑYôNUôL 5-10 ¨ªPeLs CÚkR ©u]o ClT«t£ûV ùNnVXôm.					

	ERÓY¯ T«t£ : ➢ LÝjÕ Utßm úRôsThûPLû[¨Rô]UôL ûYdL úYiÓm ➢ êdÏ Y¯VôL êfûN GÓdLÜm. ➢ ERÓ Y¯VôL êfûN ®PÜm (Sôm ®£p A¥lTÕ úTôuß) ➢ CúR úTôp êfûN GÓdLÜm, ®PÜm ùNnV úYiÓm. HúWô©d EPtT«t£ (SûPT«t£) :  Sôm SPlTRôp SpX EPtT«t£ ¡ûPd¡\Õ. Sôm					

	SPdÏm úTôÕ êfûN ®PÜm GÓdLÜm ùNnV úYiÓm. KnÜ úRûqTThPôp JnÜ GÓjÕd ùLôiÓ ©u]o SPlTÕ SpXÕ. FhPfNjÕ : ➢ ùLôÝl× Ïû\YôL Es[EQÜLû[EiÔRp ➢ LôoúTôûa¥úWh NjÕs[EQûY ùLôÓjRp ➢ §]Øm ×WR NjûR GÓjÕ ùLôs[úYiÓm. ➢ TÚl×, LPûX, ThPô¦, Tôp ØRVYtû\ EhùLôs[Xôm. ➢ Ï°o YûLVô] BLôWeLû[R®olTÕ SpXÕ. ➢ YônÜ HtTPdá¥V BLôWeLû[R®olTÕ SpXÕ. AûY ØhûPúLôv, Àuv, Lô©[Yo, ØRVûY BÏm. ➢ ¨û\V Ri½o Ï¥dLXôm. ¼, LôÀ úTôu\Ytû\ R®olTÕ SpXÕ.					
SXdLp® Tt± ®[dÏRp	SXdLp® :					SôhThP ÖûWÂWp AûPl× úSô«tLô]

	➢ ×ûL ©¥lTûR R®odL úYiÓm. ➢ Ï°Wô] ãr¨ûX ùY°lTÓYûR R®odL úYiÓm. ➢ §]Øm EPtT«t ùNnV úYiÓm. ➢ Su\ôL E\eL úYiÓm ➢ ÑjRUôL CÚdL úYiÓm ➢ ÕnûUVô] Lôtû\ ÑYô£dL úYiÓm.					SXdLp® Tt± ®Y¬?
	ÑÚdLm : Sôm CqY[Ü úSWØm SôhThP ÖûWÂWp AûPl× úSôn, ARàûPV ¨LrÜLs, LôWQeLs, A±Ï±Ls, T«t£Ls Utßm EQÜ YûLLû[Tt±Ùm TôojúRôm.					
	Ø¥ÜûW : ¿eLs CkúSôûV Tt± Su\ôL A±k§ÚlÀoLs Guß Sôu Sm×¡ú\u.					